Vol. 120, No. 19

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

May 10, 1945

Sees Trade Act a Threat to Paper Industry

President Brown of American Paper and Pulp Association States Before House Committee Any Tariff Reduction To Increase Paper Imports Will Cause Unemployment — Free Newsprint Is Cited.

[FROM OUR REGULAR CORRESPONDENT]

In testifying before the House Committee conducting hearings on the Reciprocal Trade Agreements now pending before Congress, D. K. Brown, president of the Neenah Paper Company, and president of the American Paper and Pulp Association, representing the paper and pulp industry, told the members of the Committee that this Act is a serious threat to paper and pulp manufacturing, America's sixth largest industry, which in 1944 had invested capital of 2.88 billion dollars; employed 147,000 people; and paid wages amounting to 329 million dollars.

Mr. Brown pointed out that the United States paper industry is peculiarly sensitive to foreign competition, for it is unique among American industries in being forced to compete with foreign nations whose production methods and abilities are identical with ours, but whose wage rates are substantially lower than the wage rates of American workers in comparable jobs. The result of this situation invariably is that the country with the lowest wages and the poorest standard of living is automatically the lowest cost producer of paper. Every papermaking country in the world is a lower cost producer of paper than the United States.

Would Lower Wage and Living Standards

With these facts understood, it is as clear as two plus two equals four, that if the United States paper industry is to survive, it must either be by means of reduced wages and living standards, or by means of such tariff equalization as will permit the continuance of United States standards of wages and living. There can be no other alternative, Mr. Brown said. The number of man-hours required to make a ton of paper varies with the grade produced, from ten to fourteen hours in the coarse grades to forty-five hours in writing paper. On the average, every ton of paper imported deprives one American worker of three days' employment; but in the writing paper mills, one ton of such paper would represent a full week of work. Any tariff reduction which increases imports thus results in an immediate proportionate idleness of American paper mill employees.

Mr. Brown told the members of the Committee that the United States paper industry is essentially what might be called a "Main Street" or a "home town" industry. It consisted in 1939 of 969 units located largely in smaller manufacturing communities where water power is available. Approximately half of the industry's investment is in towns wholly or largely dependent on the business developed through these mills. Fifty-eight per cent of the nation's mills are in communities with a population of under 10,000 and the largest percentage of the primary industry is in communities estimated to be from 70 to 100% dependent on the mills.

Cites Free Newsprint Act of 1911

The United States experimented with reciprocity in 1911, and the United States newsprint industry in particular and the entire industry in consequence were the victims of that experiment. When the United States made newsprint duty free as its part of a reciprocal trade agreement with Canada—an agreement which Canada failed to ratify—the newsprint industry moved to Canada. Since that time, American mills have been compelled to abandon that field while it has had tremendous growth outside the United States, principally in Canada, England and the Scandinavian countries. In 1944, the United States produced only 22% of her consumption, when before 1911, she produced between 80 and 100%.

Mr. Brown stated that the United States paper industry is the largest paper industry in the world and now, during the war, the United States is making and consuming about 70% of the world's entire supply. Its export markets are negligible and always have been, largely because its high wage rates do not permit competition wth low-wage produceirs in other countries. The United States should not permit its paper industry to be so hamstrung by tariff concessions to other countries that this nation will become more and more reliant on foreign mills for its own needs, as has already become the case with newsprint.

Paper and Pulp Lead U. S. Imports

Because of paper trade agreements, imports of paper and pulp into the United States are far larger than the imports of any other commodity. In 1938, for example, importations of paper and pulp amounted to over $185,750,000, approximately 25% more than the importations of coffee, the next largest commodity and still a larger percentage above cane sugar, crude rubber and raw silk, the three next largest importations; all of which are produced either in very small quantity or not at all in the United States. Paper and pulp imports were over twice as large as those of chemicals, which constitute the second largest importation of manufactured goods produced in substantial quantity in the United States. That last prewar year is no exception; the facts are the same for the ten-year period, 1930 to 1939. No other imported

(Continued on page 36)

Canadian Government Plans Post-War Era

Paper and Pulp Industry of Dominion Is Expected To Lead All Other Industries In Goal For At Least $1,750,000,000 In Annual Exports — Waste Paper Stocks At New Low — Other Mill News.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., May 7, 1945—The air here is full of speculative discussion about war contract cancellation, industrial reconversion and the White Paper in which the Canadian Government has set forth a program for post-war reconstruction, founded upon a whole-hearted endorsement of free enterprise and far-reaching proposals for its encouragement. In political and financial circles there is general agreement with the claim set forth by Paul Kellogg, general manager of the Newsprint Assocation of Canada, that the pulp and paper industry, which during the last generation has been the mainstay of Canada in its world trade, will be the backbone of this country's post-war development.

In the summary of the White Paper above referred to which appeared in the PAPER TRADE JOURNAL'S issue of April 26, the goal for which the Government is aiming in this country's export trade was mentioned. Unfortunately, owing to the accidental omission of three zeros, the value aimed at was stated to be $1,750,000 annually. This should have been $1,750,000,000. As thus corrected, the paragraph therefore reads as follows:

"Recognizing the vital importance of export trade in the Canadian economy, the Government considers exports of $1,750,000,000 annually as a practicable and desirable target for post-war exports of merchandise and non-monetary gold, which would be about half the current swollen wartime exports, and while being 60% above the pre-war level in dollar value, would be only about 15% higher in the amount of goods exported."

First of All the Industries

No attempt was made to detail the character of the exports, but it can be stated as a fact that first of all the industries expected to contribute to this total is the pulp and paper industry, which in the last pre-war year led all others with total exports of newsprint, pulp and pulpwood of around $150,000,000; and second the gold mining industry, which was contributing close upon $100,000,000 in exports of gold bullion. Additional importance attaches to both these industries because the main bulk of their exports have been and still are to the United States, payments from which are of vital importance in providing dollar exchange. This exchange feature will be of greatly added importance in the post-war trade, in view of the present and prospective surplus of sterling balances in Canada.

During the war the pulp and paper industry has been exporting products to a total value of about a quarter of a billion dollars a year, and hopes are entertained that the value will be kept approximately at war level, especially in view of the many new demands for pulp and paper products which have been developed by war uses and which are applicable to normal commercial use.

As to gold, production has steadily declined during the war owing to the diversion of manpower to war purposes, but the most extensive and intensive prospecting campaign in the country's history has been proceeding during the past year. Diamond drilling has revealed at least a score of properties where large-scale new mines appear warranted immediately when men and machinery become available, and hundreds of other promising discoveries are awaiting development. Therefore a doubling of the pre-war output of gold at an early date is considered to be a reasonable expectation.

The White Paper gives no geographic breakdown of the export target, but according to the press, the following roughly outlines the expected destinations: To the United States, $700,000,000 of exports (pre-war, $376,000,000); to Great Britain, $600,000,000 (pre-war, $326,000,000); to Europe, exclusive of Russia, $200,000,000 (pre-war, $75,000,000); to other Empire countries, $120,000,000 (pre-war, $100,000,000); to Latin America, $40,000,000 (pre-war, around $20,000,000); to Russia, $45,000,000; to China, $30,000,000.

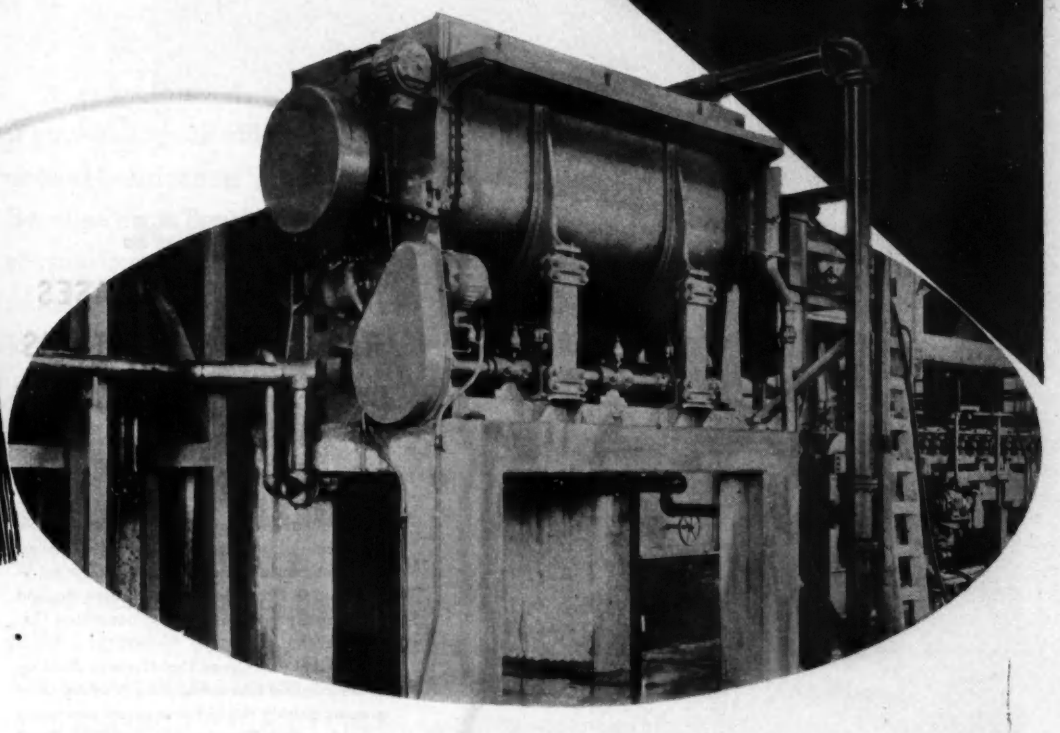
Waste Paper Stocks at New Low

Stocks of waste paper are at an all time low in Canada, and some mills have been forced to operate on short time in consequence. A bulletin issued by the Department of National War Services declares that Canada cannot do her part in finishing up the war unless citizens continue to salvage waste paper, and declares that in this emergency the burning or destroying of paper verges on sabotage. Herbert C. Holland, chairman of the local salvage committee, discussing the shortage, which he says is "alarming," remarks that the possibility of victory had misled the public into the idea that the demand for waste paper has become less acute. This, however, is erroneous, for the heavy need for waste paper will continue for at least 12 months after the termination of the European war, and possibly even longer than that. It is used almost 90 per cent, he says, in the manufacture of cartons and containers for domestic and more especially for overseas use for packing blood plasma, ammunition, foodstuffs, etc., for the armed forces and devastated countries.

Transportation Tie-up Relieved

The acue congestion in transportation which for a time seriously interfered with delivery of newsprint from Canada to the United States has now been relieved, and shipments are going forward more regularly. The federal Transport Controller, in announcing measures for the immediate stoppage of war material en route towards the European battle-front upon receipt of advices from overseas, stated that while the railways are still short of box cars, they are much better off than in February in the interchange between Canada and the United States. In February there were 12,000 more Canadian box cars in the U. S. than there were U. S cars in Canada. Today the debit has been reduced to 6,000 cars.

TAKE A LOOK AT YOUR SCREENS



Just because Bird Screens are about the most familiar and universally used item of paper-making machinery in the industry is no reason you should take 'em for granted.

The effect of proper Screen selection, installation, operation and maintenance on quality, quantity and economy of production is so important that it pays to put the spotlight on screening — make sure that it's one hundred percent right for the job.

If there's any question about it, now is the time to get in touch with *Bird Machine Co., South Walpole, Mass.,* headquarters for the Screen that's standard of the world, the

BIRD SCREEN

"Engineered Lubrication"....

TYCOL

GREEN CAST GREASES REDUCED APPLICATIONS BY 33⅓% AND CONSUMPTION BY 66⅔%

One well-known plant met the usual trouble of extreme pressures with the resultant excessive wear on a huge piece of equipment — changing to *Tycol Green Cast Grease* stopped this highly unsatisfactory condition immediately.

Why do Tycol Green Cast Greases stand up in the toughest lubricating jobs — where other greases quickly run out or separate into caked soap deposits? The answer is simple. Tycol Green Cast Greases are made from high quality cylinder stock and well refined neutral oil combined with a minimum of soap for a given consistency. Green Cast Grease is water repellent . . . and is engineered to "take it" under all conditions.

A Tide Water Engineer will be glad to give you full information.

DRUMS! DRUMS! DRUMS!

War needs make it extremely important that all empty drums be returned as soon as possible.

TIDE WATER

MAKERS OF THE FAMOUS VEEDOL MOTOR OIL

Eastern Division:

17 Battery Place, New York 4, N. Y.

...the TYCOL way

CUTS DOWN REPAIRS... SPEEDS UP PRODUCTION

If you want peak efficiency . . . low-cost operation — turn to Tycol "Engineered Lubrication" for all-important help in securing these results. Why? Because each Tycol lubricant is scientifically engineered to meet definite service conditions . . . to reduce wear and maintenance costs to a minimum. That's why so many successful operators have turned to Tycol for low-cost lubrication.

In developing this individualized line of lubricants, Tide Water has complete control over its own products — from oil field, through transportation, to refining. The most modern processes are used to refine selected crudes . . . to blend and compound Tycol's "specifically engineered" oils and greases.

For complete information regarding the specific oils and greases best suited to meet your requirements, call or write your nearest Tide Water Associated office. There a Tide Water engineer, thoroughly experienced in all phases of industrial lubrication, will give you the full benefit of his knowledge.

Have you received your copy of "Lubricania"?

This informative handbook, "Tide Water Associated Lubricania", gives clear, concise descriptions of the basic tests used to determine important lubrication properties — Pour Points, Viscosity, Neutralization, and many others. For your FREE copy write: Tide Water Associated Oil Company, 17 Battery Place, New York 4, N. Y.

ASSOCIATED OIL COMPANY

Principal Branch Offices:

Boston • Philadelphia • Pittsburgh • Charlotte, N. C.

Paper Mill Employment Is Slightly Higher

Industrial Commission Reports Increase In Employees With Payrolls Larger — Mill Plans For Annual Clean-up — Recommends Better Handling of Timber Lands — Other Late Industrial News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., May 7, 1945—Employment in Wisconsin paper mills and paper product concerns showed a rise of 0.2% in March as compared with February, according to the Industrial Commission of Wisconsin. There were 23,100 persons on the payrolls during March, and 23,000 in February.

Average weekly payrolls increased 1.8% in March, the totals being $952,000 in March, and $936,000 in February. The average per worker was $41.30 per week of 49.1 hours. The average hourly wage was 84.1 cents.

In the Milwaukee metropolitan area, 21 plants reported 2,201 persons employed, an increase of 1.3%. Payrolls in these paper and allied plants totaled $85,996, an increase of 0.1% in March as compared with February. Average weekly pay was $39.07 for 45.5 hours, or 85.9 cents an hour.

Mill Plans Annual Cleanup

Lakeview mill, Neenah, Wis., of the Kimberly-Clark Corporation has set aside the week of May 7 to 12 for the annual spring cleanup and fire prevention. This year's program is being dedicated to the 475 persons actively engaged in fire prevention work, particularly the mill's fire brigade.

The brigade, which includes three squads of 12 men each and which is headed by a fire captain, is under the direction of the mill fire chief. One squad is always on duty, responding to all fire alarms within the mill, leaving regularly assigned jobs prepared to man the fire fighting equipment which may consist of anything from a small extinguisher to the laying of hundreds of feet of hose.

The brigade is supplemented by 438 fire wardens and leaders whose assigned duties are to be on the alert for infractions of fire prevention rules, evacuate people from the area or building when the alarm comes, and to patrol and police the evacuated areas.

Training of the supplementary fire fighters is the direct responsibility of Ralph Smart, the mill's fire chief, coached by George P. McGillan, corporation fire inspector, and George Stadler, superintendent of buildings and grounds.

Service on the fire squads is voluntary and several of the present members have served on fire brigades in the corporation's mills for 25 years.

Wisconsin River Flow Decreasing

The Wisconsin river flow is slowing down after several weeks of surplus flow, the Wisconsin Valley Improvement Company reported last week at Wausau, Wis.

The flow at Merrill, Wis., early in the morning of May 2 was 3,302 cubic feet per second, as compared to the 24-hour average of 3.334 cubic feet per second and the seven-day average of 5,085 cubic feet per second, ending that morning.

The company's reservoirs gained 782,000,000 cubic feet during the week ending Sunday, April 29, when the waters of the reservoirs totaled 14,917,000,000 cubic feet. This compared with 9,200,000,000 cubic feet recorded a year ago on the same date, and with 15,248,000,000 cubic feet on the same date in 1942, the highest total for April 29.

Urges Better Handling of Timber Lands

Luther B. Burkett, United States Forest Service official, who recently completed inspection of woodlands in Portage County, Wisconsin, declared last week that most woodlands in the county are not being handled wisely.

Cutting and grazing practices must be changed, he said, or a few generations hence the eastern portion of the county may become a sand-blown desert, and the western portion an area swept by winds, with topsoil blown away and farms abandoned as worthless. He suggested a five-point program:

Survey of farm timber needs, based on fuel, post, lumber and shelterbelt requirements; fence stock out of that area; plant trees in area if it is understocked; cut for fuel only defective and preferably overmature trees—never clear small patches; obtain from county agent or forester advice on individual woodlot problems.

Plans Accident Study Program

Edward A. Page, personnel director of the Lakeview mill of Kimberly-Clark Corporation, has made plans for an accident investigation program to feature the monthly meeting of the Twin City Safety Council Tuesday evening, May 15, at Hotel Menasha, Menasha, Wis.

Mill employees will present a skit featuring a mock accident while members of the council will conduct an investigation of the accident. A demonstration on how to prevent accidents will be given. H. H. Aderhold is general chairman for the meeting, and Gordon E. Mortensen is program chairman.

Labor Board Makes Certification

The National Labor Relations board last week announced certification of the International Brotherhood of Papermakers (AFL), as the bargaining agent at the Gilbert Paper Company, Neenah, Wis. The certification is confirmation of a recent election among employees to determine a bargaining agent, which was won by the union.

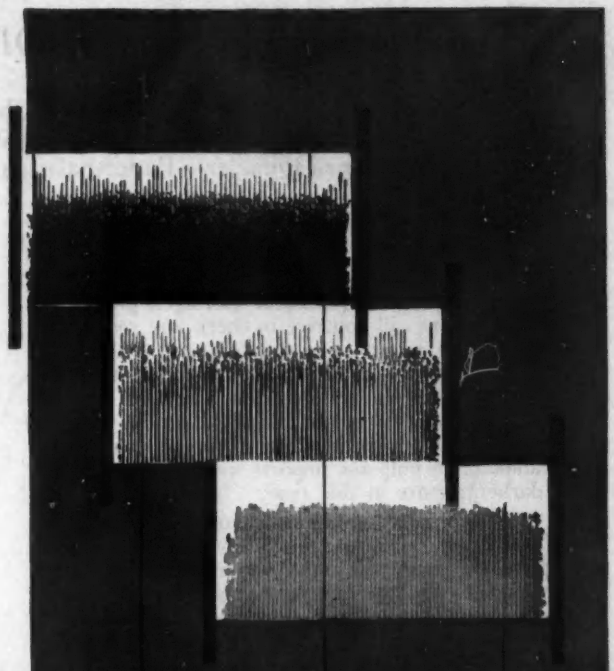
Alex. W. Macvie Announces Change

Alexander W. Macvie, 1414 Portage street, Kalamazoo, Mich., terminated representing Parsons & Whittemore, Inc. as of May 1, which company he had been representing for nearly 28 years. During all of this time he has had his headquarters in Kalamazoo, Mich. and for the past several years has travelled Indiana, Illinois and Michigan for this concern.

Mr. Macvie will continue to represent Elop Hansson, Inc., which company he has represented for the past several years, on their Scandanavian and foreign grades of pulp.

ONE OF 27 DOW CHEMICALS USED BY THE PAPER INDUSTRY

they "tend to their knitting" and make a better yarn!



A TYPICAL DOW BATTLE AGAINST MOLD

Manufacturers bothered by mold problems may learn a profitable lesson from textile weavers.

When fabric is woven, warp yarns must be stiff to enable the shuttle carrying the filler yarns to pass through without abrasion which causes wear and possible fracture of the yarn. To make it stiff, yarn is subjected to a process called "slashing" which consists of running it through a solution containing starch and oil. Naturally, the mixture is subject to mold and bacterial attack but, in addition, yarns sized with it may also be affected causing loss in tensile strength and possible discoloring due to mold stain.

Dow technicians experimented, tested, experimented more, tested more—and presented the answer . . . Dowicide. Today, this effective product protects slashing solutions . . . better fabrics woven by the textile industry are proof of another victory in the never-ending battle against mold.

Dow technicians and specific Dowicide products are ready to fight mold wherever it rears its head—in the paper, paint, lumber and other industries. If you have a mold problem, get in touch with us.

THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle

Dowicide
Germicides and fungicides

DOW

CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

Midwest Views Shortages with Concern

Short Supply of Wood Pulp, Chemicals and Manpower Seen As Preventing Any Material Improvement In Civilian Paper Supply In Third Quarter—Paper Salvage Drive Sets Record—Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., May 7, 1945—Consensus of opinion in the Chicago paper market is that the present combination of pulp and chemical shortages, plus a lack of manpower, will contrive to check any real betterment in the market for the balance of this year. Previous reports indicated the hope that the third quarter might show an upward trend in available pulp and manpower but the shipments of finished paper to foreign ports plus the vanishing hopes for Scandinavian pulp for imports were helping to paint a darker picture at this time.

Jobbers reported only a trickle of the steady stream of all grades of paper necessary to fulfill civilian orders and reported, rather, a growing government demand. Some hope of a lessening of the government requirements was expected in the abandonment of some controls after V-E Day. However, even here, the trade was expecting that the transfer of troops to other war theaters would more than take up the slack.

Of all the grades of paper most upset this week, the box board trade seemed to rank at the top of the list. Continued pressure for more containers for overseas shipments, plus the fact that container mills are already working to capacity, gave rise to the belief that the boxboard industry would be pressed more and more into government service. Books and covers and all grades of sulphites were particularly tight in this area this week.

Salesmen Entertain Rector

A gratifying audience of paper sales executives and guests attended the April 30 noon meeting of the SAPEYES Western division to hear an outstanding churchman discuss the need for more religion in the conduct of business affairs. The speaker at the Hotel Sherman meeting was Rev. Frederick L. Barry, rector of St. Lukes Episcopal Church, Evanston. Reverend Barry pointed out that while he had succeeded Bishop George Craig Stewart, late chaplain of the SAPEYES, in his present pastorate, Dr. Barry had never met him. However, he paid high tribute to Bishop Stewart and thanked the Western division for its generosity in raising funds to aid the church in a special building and expansion program. The speaker was introduced by "Pat" Patterson, Flambeau Paper Company, vice president of the Western Division.

Paper Men Community Leaders

The Chicago Association of Commerce this week published its Committee Directory for 1945. The paper industry was again represented in the executive personnel of this outstanding organization by many paper trade leaders headed by Walter P. Paepcke, Container Corporation of America, a member of the board of directors. The various divisions related to the paper and allied trades are as follows: Boxboard, E. P. Lannan, Chairman, Central Fibre Products Company, H. C. Baumgartner, Container Corporation of America, J. P. Brunt & Co., G. J. Kroeck, Kroeck Paper Box Company, Paper and Envelopes, John D. Swigart, Swigart Paper Company; Paul Butler, Company; Arthur U. Claghorn, Pioneer Paper Stock Company; J. Owen Lee, Great Lakes Paper Company; S. L. Schwarz, Schwarz Paper Company and Harry A. Swigert, Jr., Neostyle, Inc. Ralph L. Atkinson of the United Wall Paper Factories, Inc., is listed as vice chairman of the Paints and Glass Division. G. R. Gordon of the Container Corporation of America is named as a member of the Industrial Traffic Council.

Set Paper Salvage Record

Chicago and suburban communities established a new one day waste paper salvage record on April 28 in the special Eisenhower drive. Nearly 2,000 tons in excess of the goal, the area is expected to show close to 12,000 tons of paper for the one day effort. Collections in Chicago alone were reported to be nearly 6,000 tons. All business houses, big and small, and industries cooperated wholeheartedly according to J. R. Robertson, secretary of the Chicago Newspaper Publishers Association. Among the organizations participating were the Office of Civilian Defense, Boy Scouts, Girl Scouts, Camp Fire Girls, department stores, hotels and restaurants. The newspapers did a splendid job of widely publicizing the drive for days in advance of the well coordinated program.

Make Paper Specialties at Ossining

[FROM OUR REGULAR CORRESPONDENT]

OSSINING, N. Y., May 7, 1945—Production got underway last Monday at Ossining's newest manufacturing plant, housing the Hi-Land Paper Products at 88 North Highland avenue.

Manufacturing envelopes and bags, such as those used for potato chips and bread, the Hi-Land plant will ultimately employ approximately 100 from this area, the plant manager, and one of the four partners, Arthur Heineman, Brooklyn, said.

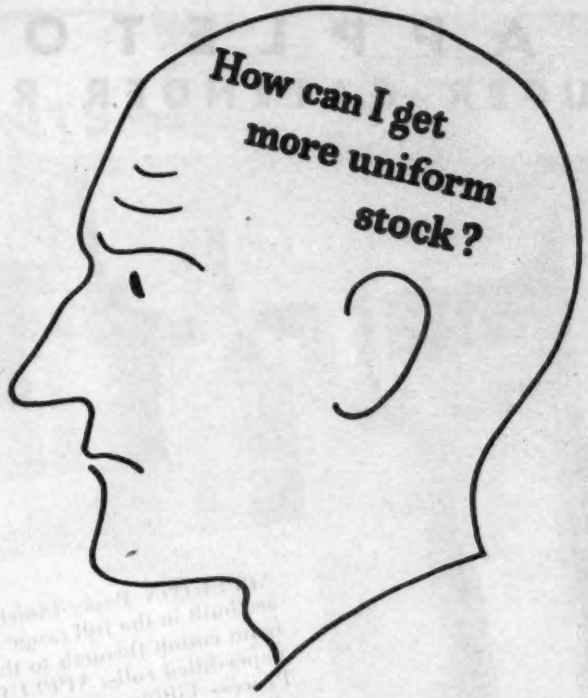
While at first there will be only 15 employees, this number is expected to expand to 25 by the end of the year, and to 100 when complete equipment is available.

Besides Mr. Heineman, the other partners are W. A. Geiger, Baltimore; H. E. Hallman, Baltimore, and Irving A. Singer, the Bronx. Mr. Geiger and Mr. Hallman now operate a similar specialty business, called the Columbia Paper Products, in Baltimore, but the new manufacturing company has no connection with the Baltimore concern.

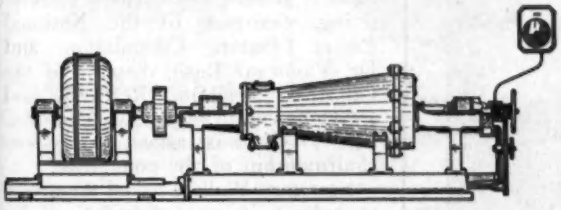
Kalof & Co. Formed in Los Angeles

S. J. Kalof has organized Kalof & Co. to deal in coarse papers at 3650 South Soto street, Los Angeles 11, Cal. S. J. Kalof, the head of the new concern, visited in the paper market in New York last week.

HEADACHE REMEDY for Jordan operators



You can get more uniform stock, in spite of normal variations in flow or consistency, with a **TAYLOR JORDAN PLUG PRESSURE RECORDER**



EVERY Jordan operator has three tough problems if he wants to deliver uniform stock to the machine. Stock Delivered, Consistency, and Plug Adjustment—each one can be a headache if it is not controlled.

Even slight variations in consistency or the amount delivered greatly affect the action of the Jordan on the stock and the uniformity as expressed in fibre length and degree of hydration. The Taylor Jordan Plug Pressure Recorder enables the operator to adjust the plug to a definite processing pressure regardless of normal variations.

The instrument is sensitive to the slightest variations. One superintendent states, "The thing that amazes all of us is its tremendous sensitivity. By careful setting of the handwheel, pressure adjustments as low as 100 psi. are obtained and these slight adjustments are sufficient to bring the stock to the quality desired."

It can be installed on practically every standard make of Jordan. It is available in ranges of 0 to 5,000 and 0 to 10,000 psi. It pays for itself over and over again in more uniform quality and power saved. Ask your Taylor Field Engineer! Or write Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada. *Instruments for indicating, recording and controlling temperature, pressure, humidity, flow and liquid level.*

ARMY (E) NAVY

Taylor Instruments

MEAN

ACCURACY FIRST

IN HOME AND INDUSTRY

BUY MORE WAR BONDS — AND KEEP 'EM

APPLETON
SUPER-CALENDER ROLLS

APPLETON Paper-Finishing Rolls are built in the full range of density from cotton through to the hardest paper-filled rolls. APPLETON New-Process Fillings were developed to give long service and finer finish on coated and clay-filled stocks. In our complete selection we have the right fillings for your papers—no matter how different or difficult your finishing problem may be.
THE APPLETON MACHINE CO.
Appleton • Wisconsin
Eastern Sales: CASTLE & OVERTON, Inc.
630 Fifth Avenue, New York City

APPLETON
EMBOSSING ROLLS

Uses Flax Paper

The first company annual report to be printed on non-critical flax paper has been issued by Standard Oil Company (New Jersey). The report also constitutes the largest printing yet made on this relatively new paper, according to its manufacturer, the Ecusta Paper Corporation, Pisgah Forest, N. C. The paper was originally developed five years ago for cigarette manufacture.

Standard Oil Company calls attention to its selection of the paper in the annual report, which states:

"In cooperation with the Government's wartime conservation program, wood-pulp paper has been saved by printing the text pages of this report on paper made from non-critical flax."

The profusely illustrated 1944 report was designed by Franz Hess and Walter Huxley with typography by Huxley House.

The paper used is Ecusta Flax Bible paper, Substance 30. The report was printed by the Arrow Press.

The paper, unusually opaque for a lightweight sheet, was run at high speed to meet a rigid production schedule. It is manufactured direct from virgin flax fiber.

The text, including financial statements and notes, and the main narrative is set in Bodoni Book linotype. The covers were printed in gravure by Photogravure and Color Company. The covers depict oil being moved to the war fronts—from oil well, through a refinery, aboard landing craft, and at a beachhead.

The total printing, all of which except for covers was made on the airweight book paper, was 225,000 copies.

To Study Patent System

Appointment of a committee to study the workings of the present U. S. patent system and prepare recommendations for legislation to overhaul it, has been announced by Secretary of Commerce Wallace, following receipt of a letter from President Truman criticizing the present system.

The President's letter pointed out that much had been said and written lately to suggest the patent statutes do not in all respects serve the constitutional purposes behind their enactment, and that patents have been misused to support unlawful monopolies in contravention of the purposes of the anti-trust laws.

The President suggested a full objective study, and in line with his suggestion, the Secretary invited Director of Economic Stabilization William H. Davis, Attorney General Francis Biddle, Dr. Charles F. Kettering, chairman of the National Patent Planning Commission, and Dr. Vannevar Bush, director of the Office of Scientific Research and Development, to serve as a committee. Mr. Davis was asked to assume chairmanship of the committee.

Secretary Wallace asked the group to submit its recommendations by June 30.

C. D. Orchard Promoted

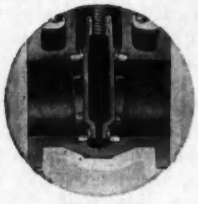
C. D. Orchard has been promoted from Chief Forester to Deputy Minister of Forests for the Province of British Columbia. Mr. Orchard brings to his new post of "Deputy Minister of Forests and Chief Forester" 25 years' experience.

He's a keen conservationist. All his public speeches have reflected this. He's been responsible for setting in motion plans aimed at preserving B. C.'s forest wealth. He also has a strong interest in the research department to be established at the University of British Columbia. He's a research scientist himself, graduating with the degrees of B.Sc.F. and M.F. from the University of British Columbia.

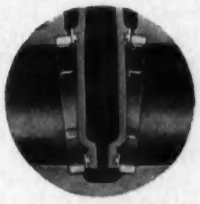
WALWORTH PRESENTS *A New Line of* IRON BODY GATE VALVES

with screwed or flanged ends

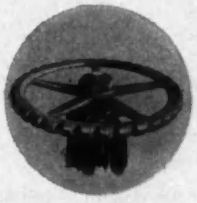
... *8 Outstanding Features*



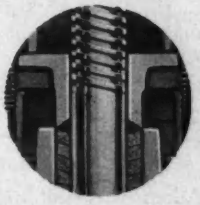
Straight-Flow Port Design reduces fluid turbulence to a practical minimum.



Seat Rings of end-seated type are screwed into the body.

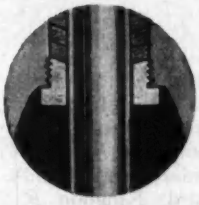


Sure-Grip Malleable handwheel for non-skid gripping even with heavy gloves.



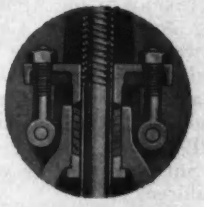
Brass Liner on Glands assures greater resistance to corrosion and scoring.

T-head disc-to-stem connection on OS&Y types provides stronger connection, prevents loosening of disc by corrosion.



Bronze back-seat bushings in bonnets of OS&Y valves. (As soon as W.P.B. Limitation order permits.)

Solid Web Type disc in OS&Y valves for greater strength and longer service.



Hinged Gland Eye-Bolts on OS&Y valves permit faster, easier repacking under full pressure.

12 AWARDS TO 4 PLANTS

WALWORTH

valves and fittings

60 EAST 42nd STREET, NEW YORK 17, N. Y.

For Complete Information on these new Walworth Iron Body Valves, write for bulletin 106.

DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD

Obituary

Charles N. Pierce

Services for Charles N. Pierce, 72, vice president of the Langan Paper Company, Des Moines, Ia., were held April 3 at Dunn's Funeral home, with the Rev. Dr. Frederick M. Meek officiating. Burial was in Glendale Cemetery.

Mr. Pierce, who had been associated with the paper company for 54 years, died at his home, 530 Forty-sixth street, following a brief illness. He was a lifelong Des Moines resident.

He was a director of the Central National bank and a member of Plymouth Congregational church and of the Pioneer club.

Surviving are his wife, Elizabeth Dredge Pierce; a sister, Mrs. E. G. Brewer; a niece, Marian Brewer; and nephew, H. Pierce Witmer, all of Des Moines.

Mrs. Anna H. Cheney

Mrs. Anna H. Cheney, 56, wife of Howard L. Cheney, owner of the Cheney Pulp and Paper Company, Franklin, Ohio, died at Miami Valley Hospital, Dayton, Ohio, on April 28, Mrs. Cheney had submitted to a major operation Thursday and did not rally.

Mr. and Mrs. Cheney are noted for their many philanthropic deeds not only in Franklin and Middletown, but also in surrounding villages. Wife of a prominent leader, Mrs. Cheney came to Franklin from Dayton about 31 years ago.

Survivors include her husband, one daughter, Mrs. E. H. Bindley, of Franklin; two grandchildren, and three brothers, B. Omer Hostetter and Albert R. Hostetter of Dayton, and A. B. Hostetter of Short Hills, New Jersey.

Services were held in the Unglesby Funeral Home on May 1.

Adam A. Wendt

Adam A. Wendt, 81, organizer and former manager of the Wisconsin Wire Works, Appleton, Wis., died April 27 at his home at Wickliffe, Ohio.

While in Appleton, he worked first for the Appleton Wire Works, and then, after he designed and patented some looms, he organized his own firm. His looms were built by the Appleton Machine Company. Leaving Appleton for Cleveland, Ohio, he designed a power loom which he later placed with the Buchanan and Bolt Wire Weaving establishment in Holyoke, Mass. He remained with that company for 12 years and then retired to his farm in Wickliffe, Ohio, in 1919.

Survivors are the widow, a son, and three grandchildren.

Delaware TAPPI Discusses Melamines

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineers Club, Philadelphia, Pa. on Friday, May 4. A. L. M. Bixler of the Riegel Paper Corporation presided as chairman. More than 100 attended.

Reports of the officers were read and the Secretary announced the result of the mail ballot. The officers for the coming year include: Chairman, A. L. M. Bixler, 1st Vice Chairman, John Macadam, National Vulcanized Fibre Company, Yorklyn, Del., 2nd Vice Chairman, Kingdon Watt, Curtis Paper Company, Newark, Del., Secretary-Treasurer, Miss Lois Hans, Hercules Powder Company, Wilmington, Del., Executive Committee, E. J. Albert, Thwing-Albert Instrument Company, Philadelphia, Pa., and F. W. Brainerd, Scott Paper Company, Chester, Pa.

Messrs. A. C. Schubert and Harry Hulmes were appointed members of the Auditing Committee.

John P. Weidner, former chairman of the Lake States Section and F. D. Elliott, former chairman of the Kalamazoo Valley Section were introduced. National Secretary R. G. Macdonald introduced Orwell H. Gepp, sales manager of the Australian Paper Manufacturers Ltd., who spoke briefly about the paper industry in Australia.

The feature of the meeting was a symposium on melamine resins presented by members of the staff of the American Cyanamid & Chemical Company. C. G. Landes of the Stamford Laboratories introduced the speakers. R. W. Stafford who discussed the Analysis of Melamines, Ureas and Proteins (paper published in PAPER TRADE JOURNAL on April 19, 1945) and C. S. Maxwell gave a progress report on work being done in developing wet-strength paper chemical application. This paper will be published soon in the PAPER TRADE JOURNAL.

Those present included: Dr. C. G. Albert, Edward J. Albert, John P. Bainbridge, H. E. Bartlett, E. R. Baublitz, W. L. Baumner Jr., Dorothy A. Beiswinger, A. L. M. Bixler, E. P. Boehmcke, H. C. Brill, S. G. Briscoe, W. J. Burke, L. K. Burnett, John Carson, Reginald Ed. Charlton, Theodore M. Chemerys, C. M. Connor, Thage Dahlgren, Walter Dempsey, W. P. Dohne, J. Edward Doyle, J. D. Davis, L. E. De Lauter, J. C. Dieffenderfer, John H. Dittmar, Gerard J. Eberz, J. Edge, F. D. Elliott, E. Empting, Harrison J. Farra, G. A. Farrah, Jeanne Fisher, E. A. Georgi, Orwell H. Gepp, Philip H. Goldsmith, Jesse F. Good, Ralph E. Green, Lois V. Hans, W. J. Higbie, C. W. Hoffman, H. F. Hoffman, Robert E. Holmes, Harry Hulmes, V. Jacobsen, Ralph W. Kumler, Peter Lapp, C. G. Landes, George Lane, N. H. Langhrey, George D. Lord, J. W. McAllister, R. G. Macdonald, W. M. MacDougall, G. B. Martin, C. S. Maxwell, A. L. Mayer, D. Kenneth McCurdy, R. P. McGinley, E. P. McGinn, Louise E. McGrath, Alex. McInnes, S. J. Megorgee, Lewis B. Miller, Edward C. Molin, Bert R. Neice, P. F. Neumann, E. Altee Ney, J. A. Paciello, J. J. Perot, Jr., Marguerite M. Paus, E. N. Poor, Rita L. Price, Frederick W. Ropp, Homer F. Ray, M. D. Reuben, Walter F. Reynolds, C. H. Rice, John Roslund, Frederick G. Sawyer, J. Carl Schmidt, Edward A. Shallcross, Chas. A. Shubert, Mildred H. Simon, L. Jay Smith, R. W. Stafford, Howard H. Street, George M. Suydam, Francis B. Talley, R. H. Tompkins, T. W. Toovey, J. Traill, Jr., Roy H. Underdown, Earl A. Walton, G. C. Walton, Jack Ward, Kingdon R. Watt, A. E. Waugh, A. H. Webber, John P. Weidner, W. E. Welch, R. R. Wiggins, Muriel Willenbecker, Ray Wilcox, Norman T. Woodberry, and George A. Zeiss, Jr.

Army Needs Hard Fiber Rope

The Army is desperately in need of hard fiber rope. Those who have any to offer or who have information about available supplies of cotton, sisal, henequen and jute rope, in diameters of one-quarter inch, five-sixteenths and three-eighths inch, should communicate immediately with Col. Frank F. Taylor, Jr., Quartermaster Depot, Jeffersonville, Ind.

A Constant Flow

View of one Cell Room at Niagara Plant as interpreted by the artist, Vernon Howe Bailey

TYPICAL of the modern facilities with which Niagara Alkali Company is maintaining a constant flow of electro-chemical products for use in war production is the array of liquid chlorine cells illustrated here. Such up-to-the-minute equipment plus the efficient methods of control over quality established by Niagara's pioneering chemists are responsible to a great extent for Niagara's reputation as a quality producer in this field of chemical manufacture. Niagara's products are the result of thirty-six years of specialization and their reliability represents the untiring efforts of an experienced staff devoted to quality production. Look to Niagara for reliable chemical service.

Niagara ALKALI COMPANY

60 EAST 42nd STREET, NEW YORK 17, N. Y.

CAUSTIC POTASH • CAUSTIC SODA • PARADICHLOROBENZENE • CARBONATE OF POTASH • LIQUID CHLORINE

Look for More Paper Supplies

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., May 7, 1945—With the war in Europe over, many believe that before the third quarter there will be more paper available for the civilian demand. They are not expecting much right away, but it is felt that government demands will be curtailed somewhat by the end of the second quarter. Already in this territory there has been some cutback in the volume of defense material manufactured. The volume has not been large in this immediate vicinity, but in such cities as Jeffersonville and Evansville, there have been noticeable cuts in production.

Paper manufacturers believe that when these cuts come to other sections of the state, there may be some improvement in the manpower situation in the factories. For months they have been struggling along on what labor could be obtained and this has been none too plentiful and none too efficient. The trade just could not match the salaries and wages paid in defense plants. Then too inductions caused further shortages and it is felt that these will be curtailed to some extent in the near future.

Demand for all grades of paper containers continued heavy last week and even if government demands are caught, the trade has a large back log of orders yet to be filled. Due to a very late spring, there has been little demand as yet for summer specialties. Stocks of some items, particularly paper towels, napkins and plates are very low and difficult to obtain. Tissue demand continued heavy last week, with continued shortages particularly in cleaning tissues.

Newsprint demand was at quota levels with papers continuing to turn away advertising. Given more paper, the size of most of the metropolitan papers would jump immediately at least ten per cent and perhaps more.

Paper stock continued to be in active demand with mills paying ceiling prices and wanting more than is available. Rag demand also continued heavy with supplies strictly limited. All prices were at ceiling levels.

Dr. Beall Appointed Statistician

The Institute of Paper Chemistry, through its executive director, Westbrook Steele, announces the appointment of Dr. Geoffrey Beall as staff statistician; the need for such services is due to the expansion of the Institute's activities in many and varied directions. Dr. Beall will develop the application of statistical principles in the paper industry, not only research-wise, but also as they may relate to the Institute's educational program. His knowledge and experience will be available to the staff and to the member mills of the Institute.

Dr. Beall was born at Germiston, in the Transvaal; this is one of the great string of mining towns that stretches out on both sides of Johannesburg. Since five years of age, he has resided in Canada.

In 1927 Dr. Beall entered the University of British Columbia and in 1931 graduated (B.A. degree) with honors from the Department of Zoology. He specialized in entomology and statistics. At the end of his sophomore year, he was awarded the scholarship for the best student in all biology and on his graduation he received one of the two graduate scholarships given for promise in research and open to all departments.

Dr. Beall spent the year 1931-1932 at the University of Illinois under the distinguished ecologist, Victor E. Shelford, and received his M.S. degree in zoology and statistics. The University of Illinois gave him a second graduate scholarship without teaching duties. In 1932 he declined a further graduate fellowship at Illinois, because he wanted to work in applied statistics at the celebrated School of Karl Pearson.

Therefore, the two school years 1932-1934 were spent in the Department of Applied Statistics of University College, University of London. This department is the creation of Francis Galton, who endowed a chair named after him. When Dr. Beall arrived, Karl Pearson was still professor. From 1934 to 1937 Dr. Beall returned to work in Canada, but in 1937-1938 he returned to the Department of Applied Statistics, working under Egon S. Pearson (son of Karl Pearson), one of England's outstanding statisticians and a leader in the development of quality control and industrial statistics in England. During this year the learned and dynamic Professor J. Neyman from Warsaw was on the staff.

In London Dr. Beall worked at the development and application of statistical theory in connection with experimentation and surveys. In 1938 he received the degree of Ph.D.

Intermittently with his work at the University of London, Dr. Beall had been in the service of the Canadian Department of Agriculture, where he continued from the summer of 1928 until 1944. His duties were statistical and of the same nature as his thesis at the University of London. During this period he published 27 pages. During a portion of this period he served as lecturer on the fundamentals of statistical theory at the University of Western Ontario.

During the year 1944-1945, Dr. Beall was in the Division of Vital Statistics of the Ontario Department of Health; four papers on population trends and one paper on a statistical problem in psychological work were published.

Dr. Beall is married and has two sons and a daughter.

Finch, Pruyn Review Wage Agreements

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., May 7, 1945—The annual wage conference between officials of Finch, Pruyn & Co. and representatives of the International Brotherhood of Papermakers was held last week at which existing wage agreements were renewed, with two changes, both proposed by the management and accepted by the labor organizations. The changes provide for a flat three cents per hour increase for all hourly workers in the pulp and paper mills and paid holidays. The agreement is subject to approval by the National War Labor Board. Officials of the company represented at the meeting included Samuel Pruyn and H. F. Bullard, vice presidents; Arthur F. Mosher, general superintendent; John Falvey, pulp mill superintendent, and Louis Valley, employment manager. The International Brotherhood of Paper makers was represented by Frank P. Barry, vice president; Albert Tracey, president of the local branch, and H. E. Coulter, secretary. The International Brotherhood of Pulp, Sulphite and Paper Mill Workers was represented by John P. Burke, president, and Floyd Van Dusen, international representative, C. J. Moynihan, president of the local branch, and Joseph A. Vincent, financial secretary. Representatives of the International Brotherhood of Machinists, United Brotherhood of Carpenters, and International Brotherhood of Electrical Workers also attended.

Containerboard on Urgency List

Containerboard, as defined under Order M-290, including solid and corrugated fiber sheets, used in the manufacture of fiber containers and boxes, has been placed on the National Production Urgency List, the War Production Board reported May 5. This means that manufacturers of this type of paperboard are entitled to the highest urgency ratings when seeking to replace labor losses or to increase the number of employes for additional production.

Besides containerboard, sulphate wood pulp, for which there is a current high demand in paper and paperboard production, container veneer and steel strapping were added to the Production Urgency List.

These products and materials are urgently needed to meet the increasing packaging demands of the Army, Navy and essential industries, according to Benton R. Cancell, director of the WPB Forest Products Bureau.

The inclusion of these items on the National Production Urgency List will enable manufacturers to seek and obtain higher urgency and priority ratings as well as higher manpower ceilings. This, in turn, will aid manufacturers materially in increasing the production of containerboard and certain other forest products sorely needed in the war effort, Mr. Cancell said. He also pointed out that it should prove effective in transferring a number of workers from non-war employment to critical war jobs.

The Forest Products Bureau, he added, is advising manufacturers and members of the industry affected by the additions to the Production Urgency List as to procedure in seeking additional employes and on related problems.

Great Lakes Reports Production

TORONTO, Ont., May 7, 1945—Available wood supply determined the volume of production of the Great Lakes Paper Company during 1944, according to the company's recent report. Approximately 77% of paper mill capacity and 83% of surplus sulphite pulp capacity was shipped during the year. The volume of pulpwood cut during the season 1944-45 was substantially increased. Full benefits from this will not be immediately apparent because of an unusually early spring break-up. Capital expenditures for woodland operations were $312,040 and for mill improvements $151,247 in 1944. The company is now proceeding with expenditures, approximately $300,000, for installation of pulp drying and other equipment to effect reduction in the cost of handling and delivery of its export pulp production.

Robert Gair Employees Get Increase

ALBANY, N. Y., May 7, 1945—Announcement was made here this week by the International Brotherhood of Pulp, Sulphite and Paper Mill Workers of approval by the War Labor Board of wage increases for the employees of the Robert Gair Company. The employees are also affiliated with the International Brotherhood of Papermakers. The renewed annual contract, approved as of April 18, provides three additional holidays with pay; four cents an hour increase for second shift workers and six cents more for third shift workers, and time and one-half for the sixth consecutive day of work in a week. The company and unions have joint contracts for several thousand employees at branches in Piermont, N. Y., Cleveland, Philadelphia, Newton and Haverhill, Mass., and New York City.

OPA Denies Higher Rosin Prices

Requests for higher ceiling prices on gum rosin, primarily sponsored by the American Turpentine Farmers' Association, have been turned down, OPA stated on May 8.

Price Administrator Chester Bowles has written Judge Harley Langdale, president of the association, Valdosta, Ga., that, after careful consideration of the requests, no basis has been found on which a price increase can be justified at this time.

In his letter to the Turpentine Farmers' Association, Administrator Bowles said that existing ceiling prices are well above the minimum required by the Price Control Act, are far above peacetime levels, and are high enough to yield to the great bulk of the industry a margin over cost that should be adequate to permit full production.

In view of this, OPA could not find that an increase in ceiling prices is necessary either to relieve hardship or to maintain or increase production, he said.

No critical shortage of rosin size is reported. Stocks of rosin have been lowered by heavy shipments abroad but most suppliers state they have ample rosin size on hand.

Reports that some paper mills have been unable to obtain all the rosin size required, is attributed in some quarters to the rationing of rosin, the paper industry being permitted to consume only 70% of the quantity normally used.

It is expected in the rosin market that offerings of rosin will be resumed in the very near future, now that the OPA has refused to raise its ceiling prices.

Airplanes Spray Forests

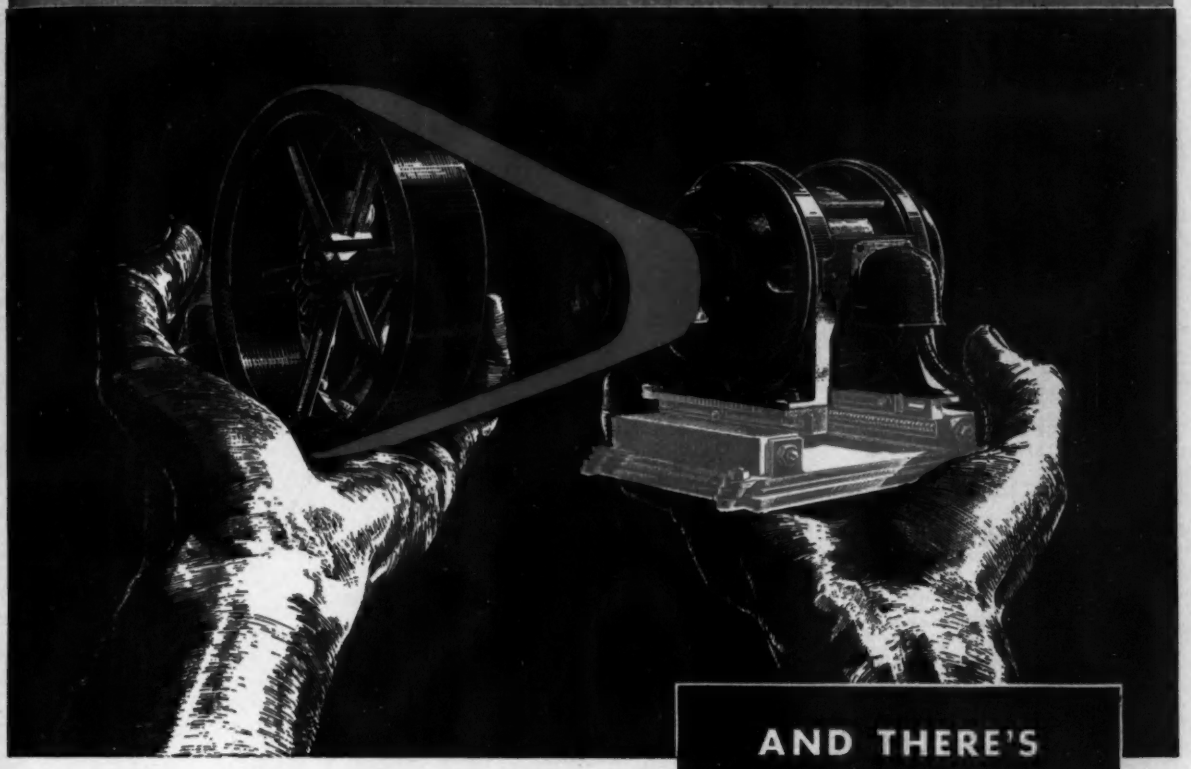
TORONTO, Ont., May 7, 1945—Amphibious planes of the R.C.A.F. have started one of the largest tests of the powers of the war-born insecticide DDT over an area of 100 square miles in the Lake Nipigon country north of Fort William, Ont. Specially fitted to spray the valuable timber stands as a protection against the spruce budworm, which had already devastated some sections, planes are to cover the area in an experiment conducted by the Ontario department of lands and forests. Results are to be studied by observers of the departments of agriculture of Canada and the United States. The airborne offensive of DDT—known technically as dichloro-diphenyl-trichloroethane—follows an experiment at Algonquin Park where DDT was sprayed by autogyro in a test last year in which it was claimed that all insects in the sprayed area were killed. In fact, the new insecticide was so lethal that it was feared that it might wipe out, not only insect life, but animal and fish life as well. Newspaper reports last autumn stated that some of the larger flies that had become poisoned by the DDT fell into the lakes and rivers and were snapped up by game fish with disastrous results. Presumably the spraying now going on is intended to kill the budworm before fly-time.

St. Regis Appoints Officers

The election of C. R. Mahaney as vice president and the appointment of Charles A. Brothman as comptroller of the St. Regis Paper Company has been announced by R. K. Ferguson, president.

Mr. Mahaney has served as general manager of the Panelyte Division of St. Regis for the past ten years. Mr. Brothman will retain his present position as treasurer of the Skenandoa Rayon Corporation, St. Regis subsidiary.

HERE'S THE ONLY BELT DRIVE THAT DOESN'T DEPEND ON TENSION!



AND THERE'S ONLY ONE BELT FOR THAT DRIVE

The high but often unsuspected costs of over-tensioned or under-tensioned belts *can* be eliminated. With the Flat Leather Automatic Tension drive, there is no need to *overstress* tension to make sure of handling peak loads . . . no need for frequent maintenance to correct slippage due to *understressed* tension.

It is the action of the pivoted base that keeps the drive delivering — not the initial tension on the belt. Tension is always right, automatically. When the load is heavy, the pivoted base *tightens* the belt. When the load is light, the pivoted base *relaxes* the belt. Belt and bearings work hard *only* when the load is heavy.

There is no pulley realignment problem. If the base ever has to be adjusted, it can be done while the motor is running, and alignment is not critical.

Save maintenance . . . on belts, on bearings. Let the pivoted base do your worrying for you. Install the Flat Leather Automatic Tension drive—with "Research" Leather Belting.

Graton & Knight's "Research" Belt has the ideal qualities for service with pivoted bases:

- Highest coefficient of friction and flexibility so that it hugs the small pulley with minimum slip, thus reducing tension needed.
- Least stretch, guaranteeing long, uninterrupted performance.

A "Research" Belt on Flat Leather Automatic Tension drive will outlast a rubber V-belt on a corresponding drive by 2 to 1! Write Graton & Knight Company, 333 Franklin St., Worcester 4, Mass., for new, free Belting Manual.

GRATON AND KNIGHT

Research Leather Belting

from Graton & Knight's complete line . . . manufactured under one control from green hide to finished product. Branches and distributors everywhere. Look under "Graton & Knight" in "Belting" section of Classified Telephone Directory or THOMAS' REGISTER.

SHOCK TREATMENT

for slime control

every Saturday:

To prevent acclimatization of slime organisms to their toxic environment, many mill superintendents are using *a double dosage of Santobrite once every week or ten days.*

This "Shock treatment," combined with regular use of 0.1 to 1 lb. of Santobrite per ton of paper produced (depending upon operating conditions) has proved highly successful in controlling slime, fungi and bacteria. And gone with these organisms are the costly degrading slime spots, breaks, blinded wires, plugged and rotted felts, clogged water lines, and dirty stock that can take the profit out of any paper mill's books.

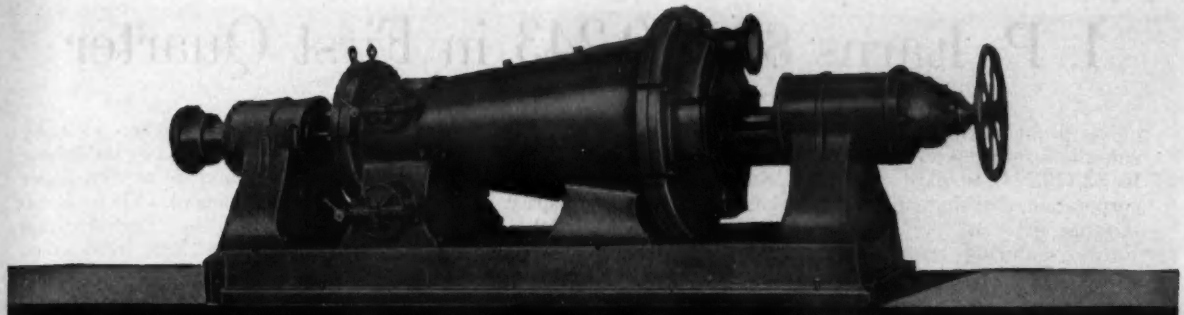
Santobrite is chemically stable, and, used properly, is safe to mill workers and users of the mill's products. It is non-corrosive to equipment, non-volatile, and comparatively odorless.

For complete technical information on Santobrite and its current availability, write: MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, St. Louis 4, Missouri.

MONSANTO CHEMICALS

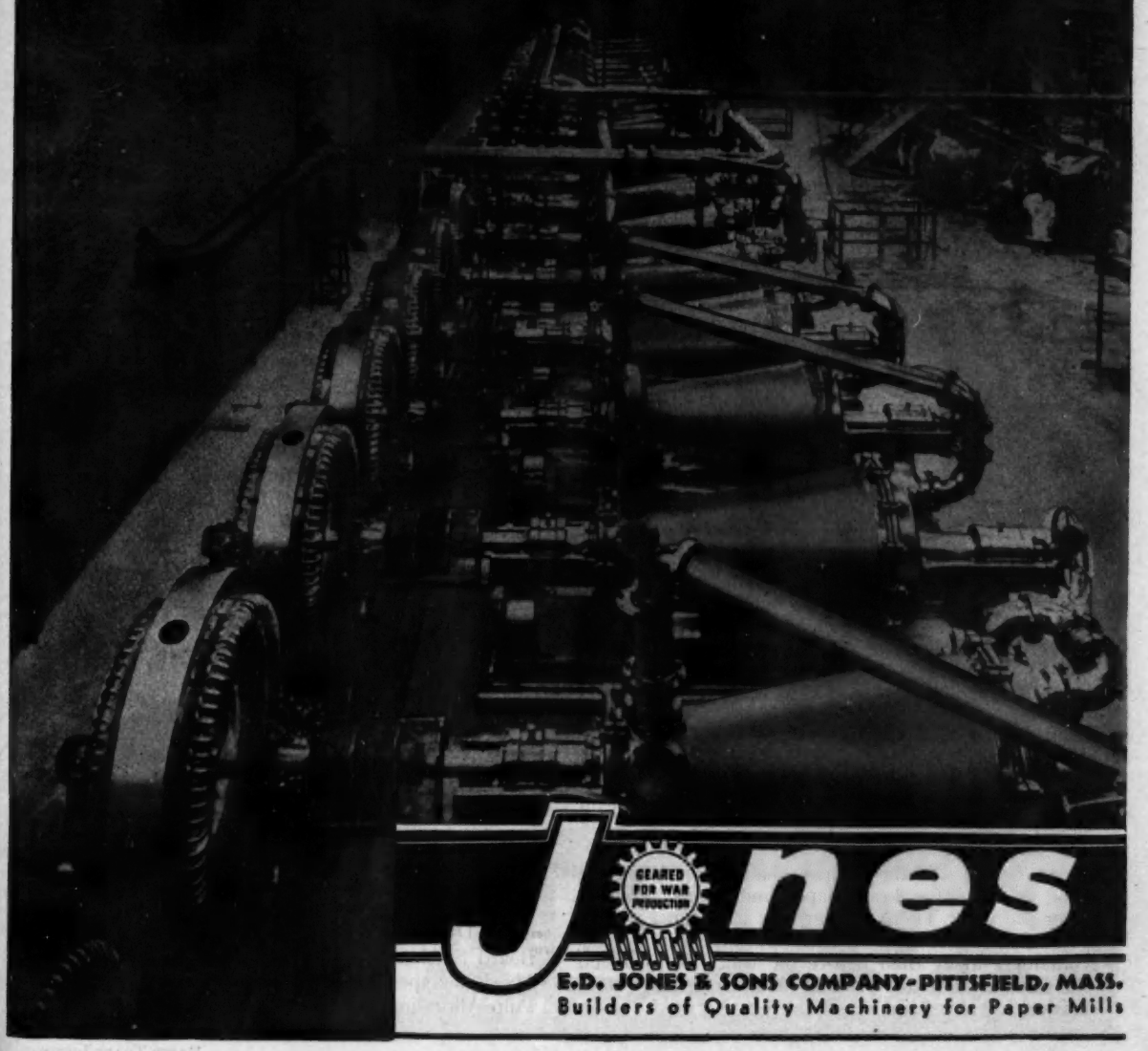
SERVING INDUSTRY...WHICH SERVES MANKIND

Plant Superintendents: Write for instructive bulletin: "Santobrite For Micro-Organism Control in The Pulp and Paper Industry."



JONES JORDANS

Wherever Performance Counts



Jones

GEARED FOR WAR PRODUCTION

E.D. JONES & SONS COMPANY-PITTSFIELD, MASS.

Builders of Quality Machinery for Paper Mills

I. P. Earns $2,110,243 in First Quarter

Net profit of International Paper Company and its subsidiaries during the first quarter of 1945 amounted to $2,110,243, Richard J. Cullen, chairman of the corporation, told shareholders at the company's annual meeting in New York Wednesday, May 9, 1945. Earnings during the first quarter of 1944 were $2,116,706.

Regarding Post-War Conditions

The company, Mr. Cullen said, is operating under strict wartime controls. Regarding immediate post-war conditions he remarked:

"The paper industry will not face the extremely difficult problems which companies in other industries must meet in the immediate post-war period. It will not need to convert from war to peace since the products which it has been manufacturing during the war are essentially the same products which it manufactures in peace times. It will not have substantial war surpluses to dispose of. It has no Government-financed war plants to consider. Productive capacity of the industry has not been built up suddenly or to any great extent because of the demands of war.

"We do not have to face the problems that other greatly expanded industries will have to face in finding peace-time markets to absorb production now being used for war purposes. We believe that the need for paper products for civilian use, which has been severely curtailed, will provide a strong demand which will carry on until normal business conditions are restored.

"Actually the pulp, paper and container board industry was not looked upon at the beginning of the war as an essential industry. The industry was not given manpower priorities.

"Later, when the vital role of paper and paper containers was fully recognized by Washington authorities, the industry was classified as an essential industry. The great demands of the Armed Forces were met by pushing the existing productive capacity to the utmost and by taking supplies away from the civilian markets."

Kraft Is Principal Production

The chairman called attention of shareholders to the fact that kraft paper and container board production today represents 54% of the total production of the company and its subsidiaries, newsprint represents 21% and other paper and paper products represent 25%. Ten years ago kraft products accounted for only 28% of production. Newsprint represented 45% of production at that time and other products the balance. Total company tonnage meanwhile has risen from 1,620,000 tons in 1935 to 2,470,000 tons in 1944. Kraft tonnage in 1935 was 460,000 tons and in 1944 it was 1,344,000 tons. Newsprint production went from 721,000 tons in 1935 to 512,000 tons in 1944, the decline being largely due to the sale of its Newfoundland mill.

Mr. Cullen said the company had reason to expect good markets for kraft paper and board products after the war. There is a greater acceptance of the economy of and serviceability of paper and board containers today than before the war. He also said the company felt there should be a strong longe-term market for newsprint:

"In the immediate post-war years when so many companies will face the problem of re-establishing their marketing and distribution systems newspaper space may be very much in demand. There is no other advertising medium which so effectively and economically covers the local markets into which manufacturers must go to reestablish dealer relationships, retail distribution, and local consumer acceptance."

Company's Production Expands

The chairman told shareholders that, despite severe manpower shortages, especially in the woods, International Paper Company and its subsidiaries had raised total production from 2,363,511 tons in 1943 to 2,469,997 tons in 1944.

The company had prepared for its shareholders a display based upon a special five-ply kraft paper board developed by International Paper Company for the armed forces and known as V-board. Among the displays were letters from high military officials testifying to the great value and importance of this paper product which the company and others have used to manufacture millions of containers under the general name of V-boxes.

An Essential War Material

"Modern war is a gigantic transportation and supply operation," Mr. Cullen said. "In modern warfare the individual cannot carry his own supplies in a knapsack or saddlebag. There has never been a migration of men even remotely approaching the vast transfer of armed forces which World War II has involved. Nothing approaching it has been attempted or even imagined in the past.

"What may be overlooked is the very great importance of container board and paper in such an organized movement of millions of men. It takes hundreds of millions of paper and board containers to run a modern war.

"International Paper Company has been a key contributor to this great wartime job. It has been a major supplier of the raw materials out of which such paper and board containers have been manufactured, and the Company has itself manufactured millions of containers."

Directors Elected

The following were elected directors of the company: Malcolm G. Chace, H. A. Colgate, Richard J. Cullen, J. H. Friend, John H. Hinman, W. N. Hurlbut, Percy H. Jennings, David T. Layman, Jr., Charles S. McCain, F. K. Morrow, Ogden Phipps, Erling Riis, B. A. Tompkins, . R. Weaver, A. H. Wiggin, and W. G. Woolfolk.

R. W. Foley Goes with WPB

Robert W. Foley who has been connected with Hollingsworth & Whitney Company for about 18 or 20 years and recently as special assistant to J. L. Madden, president of the company, has succeeded C. J. Dynes in charge of the Specialty Paper and Board Section of the W.P.B. About two years ago Mr. Foley spent six or eight months with the W.P.B. Pulp Allocation Unit.

If your material or package must provide
GREATER RIGIDITY
PROTECTION AGAINST MOISTURE, ACIDS, ETC.
CONSUMER APPEAL
WALDRON LAMINATORS
New Catalog just off the press
JOHN WALDRON CORPORATION
Waldron—2 Web Laminator.
Special 2 Web Laminator for applying Cellophane to paper or board.
Five Web Laminator —fast running wide special unit.

Get The Facts About WALDRON LAMINATORS

These are the machines used by practially all the leading converters for producing the basic materials for an almost unlimited number of popular products. Waldron Laminators are built to handle from two to ten or more webs, combining such materials as paper, board, cloth, Cellophane, Pliofilm, metal foil, varnished paper, felt, sisal, burlap, wire, wadding, etc., at speeds up to 700 feet and more per minute. Designed for any type of adhesive; embodying advanced methods of guiding, controlling and drying, Waldron Laminators are providing the essential properties required, speeding up output and lowering production costs.

• • • •

Send us the details of your laminating problem or requirements. Profit from Waldron's long engineering experience in this field. Copy of our new descriptive Catalog No. 118 is available on request.

Printing Machines
Combining Machines
Creping Machines
Floor Covering Machines
Gumming Machines
Rubber Mill Machines
Wall Paper Printing
Waxing Machines
Winders and Slitters
Special Design Machines

JOHN WALDRON CORPORATION
Main Office & Works — NEW BRUNSWICK, N. J.

WALDRON
Paper Converting Machinery

HISTORICAL HIGHLIGHTS OF PAPERMAKING NO. 13

The Devil was a Printer

From an old drawing showing the printer in league with the devil, courtesy *The American Weekly*.

When Johannes Gutenberg first invented movable metal type (approximately 1440 A.D.), he created a new mechanical art so startling that it seemed to be black magic.

The people of that day were a superstitious lot. They promptly linked the name of Gutenberg's backer, Fust, with the legendary devil's disciple, Doctor Faustus.

As printing proved its value, superstition died: but such terms as "Printer's Devil" survived from this early conception of the art as Satan's own handiwork.

The paper industry owes much to Gutenberg. His invention created the demand which has made paper a major industry, playing a tremendous part in human progress.

☆ ☆ ☆ ☆

Today, paper is a vital war material. Here at Cheney Bigelow, we intend to maintain our service to the industry in every possible manner . . . supplying dandy rolls, cylinders, Fourdrinier Wires and other mill supplies, while helping the war effort in many other ways.

CHENEY BIGELOW

Fourdrinier Wires · · Dandys · · Cylinders · · Wire Cloth

CHENEY BIGELOW WIRE WORKS · 417 LIBERTY STREET · SPRINGFIELD, MASS.

Visibility on Home Front

Camouflage to conceal fighters and their equipment in battle zones has been raised to a science, but in factories producing war materiel, visibility—the opposite of camouflage—is the much-desired goal. On the home front safety engineers study how to protect men and machines by revealing their presence and movements. Their efforts have been intensified as the speed of industrial

FIG. 1

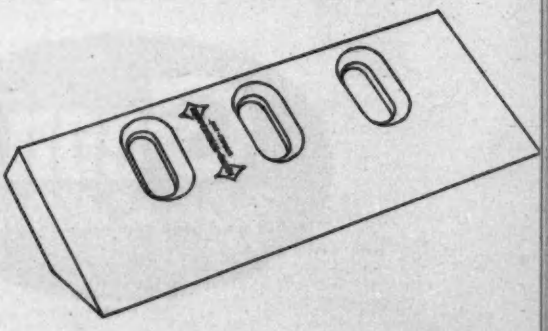
operations has accelerated, as work periods have lengthened and inexperienced men and women have been trained for factory work.

The illustrations show a simple but effective method safety engineers use for increasing visibility of mobile equipment, contrasting color combinations of stripes or bars. In Fig. 1 an Elwell-Parker fork truck is tiering bundles and boxes of carton paper in a Michigan plant; in Fig. 2, an Elwell-Parker crane is lifting a heavy load of steel bars in an Ohio aircraft factory. Although a standard color for Elwell-Parkers is a bright yellow, engineers in these plants have applied the stripes and bars to their fleets of these trucks as an additional safety measure. Luminous paint has been suggested and applied in some instances to trucks used in dim light.

FIG. 2

Heppenstall: the most dependable name in chipper knives

In charting your course of future business, it's well to remember that Heppenstall Chipper Knives have a time-proved record for extra service . . . Dollar for dollar they'll cost you less to use—Heppenstall guarantees *it . . . Heppenstall Co., Pittsburgh, Pa.*



Your personal war effort is important!

PUSH PRODUCTION • PUSH BOND SALES

WANTED
ESSENTIAL PACKAGING APPLICATIONS FOR
FILMS, COATINGS AND SHEETS OF GEON
Combinations of properties may be planned
to meet specific service conditions
Ohio Aircraft Hardware, 1549 Superior.
MACHINE OPERATORS:- Hourly rate;
night or day. Awnings &
Shades, 11510 Madison.
FOREMAN: Practical mechanic; local machine shop; manufacturing own product; postwar security; good salary; advise in detail past 5 years experience and phone number; reply confidential. Box 47441.
MILLING MACHINE, turret lathe; night
experienced; hourly rate, time and h
for overtime. Earle Machine Produc
1975 E. 65.
MILLING MACHINE OPERATORS:
perienced, for day or night work;
tial industry; high hourly ra
Tool.
Goyl

YOU can probably help yourself by helping us find packaging applications for GEON polyvinyl materials. Since the war, these relatively new raw materials have been used largely as coatings for fabrics, as electrical insulation, and in highly specialized packaging applications for military use.

Yet our prewar and current research, as well as the war performance of products made from GEON, tells us plainly that the surface has only been scratched in developing essential applications in the packaging field.

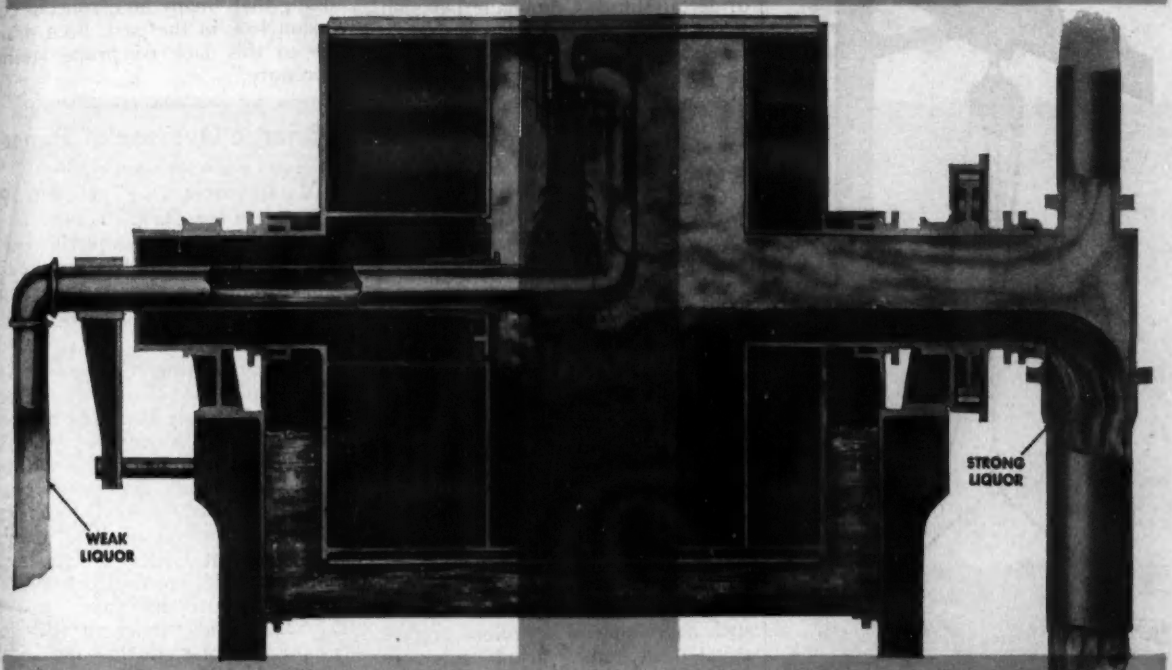
Examine the list of properties that may be had in coatings, sheets, or films of GEON. They may be made to resist water, foods, chemicals, oils and greases, acids, alkalies, air, sunlight, aging, scuffing, mildew and many other normally destructive factors. They may be delicately or brilliantly colored clear or opaque; tasteless and non-toxic, flexible or rigid. These and other properties of GEON may be had in a wide variety of *combinations*, each designed to meet specific service conditions.

Currently all the GEONS are subject to allocation by the War Production Board. While we make no finished packaging materials, our development staff and laboratory facilities are available to help you work out any special problems in connection with essential packaging applications. For more complete information, write Department MM-5, Chemical Division, The B. F. Goodrich Company, 324 Rose Building, Cleveland 15, Ohio.

Geon
Polyvinyl Materials

CHEMICAL DIVISION
The B. F. Goodrich Company
324 ROSE BUILDING • CLEVELAND 15, OHIO

OLIVER Ringvalve VACUUM PULP FILTERS



ONE CENTRALLY LOCATED VALVE

provides . . .

1 short liquor travel
2 direct flow with no piping
3 separation of liquid and air in drum
4 less friction loss

resulting in . . .

1 high capacity
2 uniform sheet formation
3 economical recovery of chemicals
4 high washing efficiency

OLIVER UNITED FILTERS INC.

New York 18, N. Y.
33 West 42nd Street

San Francisco 11
California

Chicago 1, Illinois
221 N. LaSalle Street

Western Sales Division
Oakland 1, California
2900 Glascock Street

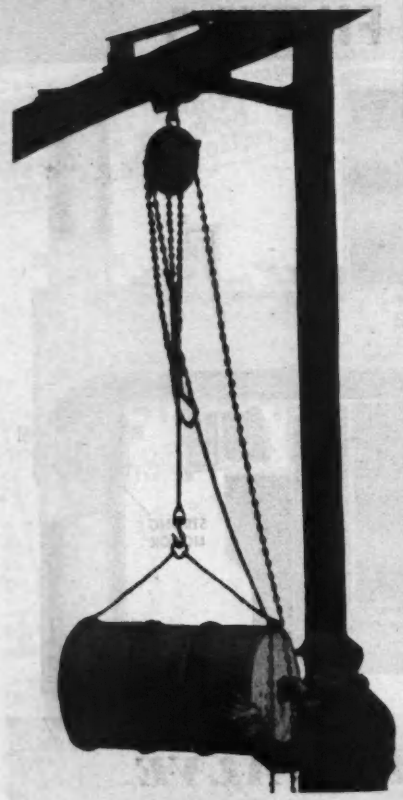
Canada: Sales & Manufacturing Representative
E. Long Limited, Orillia, Canada

Factories: Oakland, Calif. • Hazleton, Pa. • Orillia, Canada • Melbourne, Australia

Oliver Ringvalve Vacuum Pulp Filters are the industry's Brown Stock Washers—Deckers — Bleach Washers — Washer Thickeners and High Density Thickeners. They are the filters you will want right now or in your post-war plant.

Another of our series of FACTS-F106—gives full details of the Oliver Ringvalve Filter. Send for a copy.

MULTIPLY MANPOWER with READING HOISTS



unload faster

move loads easier

The multiple gear Reading Hoist used on this job gives maximum speed of load movement.

The sealed-in-oil gear unit permits operation outdoors with complete safety. Other models of Reading Hoists are available to solve materials handling jobs where lifting power is most important or where easy portability of the hoist is needed. Capacities range from ¼ to 20 tons for trolley, hook, post or jib mountings.

See your nearest distributor or write us about your materials handling problem and we will be glad to make a recommendation.

READING CHAIN & BLOCK CORPORATION
2113 ADAMS ST., READING, PA.

CHAIN HOISTS • ELECTRIC HOISTS
OVERHEAD TRAVELING CRANES

READING HOISTS

Transparent Packaging

Wider post-war use of transparent films in food packaging, with newer, war-developed films broadening the field in specialized applications, is foreseen by A. F. Wendler, manager of acetate films, Cellophane Division, E. I. du Pont de Nemours & Co.

Addressing the New York section of the Institute of Food Technologists at the George Washington Hotel last week, Mr. Wendler said that "established pre-war films will return, with improvements, in most of the pre-war channels."

New type films with improvements beyond those now generally known will become available as standard commercial materials and will find logical markets, he added, but it is likely that the newer films will broaden the field of transparent packaging materials instead of resolving themselves as competitive to the previously established types.

"The characteristics of the materials available in the pre-war era were reasonably well understood by the food technologists," Mr. Wendler pointed out, "particularly those wrappings which had been on the market for a considerable period of time, such as cellophane, cellulose acetate, metal foils, and various types of functional papers."

Technical progress in the development of new transparent films "has been very rapid," he said, but "it is very questionable if they have yet reached a state of perfection either from the standpoint of technical characteristics of the material itself, their commercial production on a large scale basis, stabilized cost to the consumer, or, more important to the food technologist, their commercial application to the products contemplated being wrapped."

Such films as "Butacite" polyvinyl acetal resin, casein, ethyl cellulose, methyl cellulose, nylon, polythene, polystyrene, polyvinyl alcohol, rubber derivatives, starch films, and vinyl copolymers were listed in the group of newer transparents.

Sounding a note of warning regarding the choice of wrapping materials for food packaging, Mr. Wendler said: "Don't be too quick to draw conclusions on the ideal wrap or the advisability of change, as there are many items which should be given full consideration before new adoptions are made."

Choice should be based upon results obtained from fairly extensive tests made upon commercially wrapped packages of the product itself, and should not be based alone upon the characteristics of the wrapper even though its properties may appear to be ideal, he warned.

"It is the combination of product and wrapper which determines the applicability of the packaging medium to a given use," said Mr. Wendler, adding that "many an erroneous conclusion has, in the past, been drawn due to this lack of proper testing procedure."

Charge Overuse of Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., May 9, 1945 — Overuse of 351,276 pounds of paper by printers and publishers in Ohio and Michigan has resulted in War Production Board compliance action against four firms, WPB reported today.

Rotary Printing Company, Norwalk, Ohio, specializing in the production of Rotary Business Systems, was charged with overuse of 277,522 pounds of print paper. This violation of WPB's commercial printing and duplication Order L-241 took place in the first quarter of 1943, officials said. Consent Order C-324, issued April 30, 1945, requires the corporation to reduce its paper use by 277,522 pounds under normal consumption quotas, during the second quarter of 1945.

George R. and Paul N. Averill, commercial printers and co-partners in publishing the *Birmingham Eccentric*, a weekly Michigan newspaper, overused 30,922 pounds of paper during 1944, in violation of L-241. Consent Order C-316, issued April 30, 1945, directs the firm to cut 15,461 pounds of paper for commercial printing from its usual consumption quotas for each of the second and third quarters of 1945.

Palladium Publishing Company, Benton Harbor, Mich., publisher of *The News-Palladium*, used 36,243 pounds of paper in excess of quota allowances, during the first, second and third quarters of 1943. This violation of newspaper Order L-240 resulted in issuance on April 30, 1945, of WPB Consent Order C-321, directing the publisher to cut 36,243 pounds of print paper from its permitted quotas by July 1, 1945.

Sentinel Printing Company, Holland, Mich., publisher of the *Holland Evening Sentinel*, was charged by WPB with overuse of 6,589 pounds of print paper during the second and third quarters of 1944, in violation of L-240. Consent Order C-322, issued April 30, 1945, requires the printing firm to reduce its usual quota by 6,589 pounds of print paper before July 1, 1945, WPB said.

Get high wet strength plus improved rosin retention by beater addition of

UFORMITE 467

IF you want to produce paper of high wet strength at minimum cost and without change in your present papermaking process, UFORMITE 467 is the answer. Wet strength equivalent to 25 to 45% of the dry strength can be obtained by simply adding 1 to 3% of this urea formaldehyde resin to the stock in the beater, chest, fan pump or head box. No aging or pre-treatment is necessary before use—UFORMITE 467 is ready for immediate addition to the stock as supplied. Dry strength, as measured by tensile and Mullen, may be increased from 10 to 20%, and fold from 30 to 100%, as proved by laboratory tests.

In addition, UFORMITE 467 improves the efficiency and uniformity of rosin sizing. As little as 0.5% resin on dry fibre weight will permit an appreciable reduction in rosin size requirements, thereby making the most of limited rosin quotas. Improved retention of clays, pigments, waxes and other beater additives as well, may be obtained by beater application with UFORMITE 467.

Testing samples are available, and our technical staff will be glad to assist you in using UFORMITE 467 to best advantage.

UFORMITE *is a trade-mark, Reg. U. S. Pat. Off.*

Represented by Cia. Rohm y Haas, S.R.L., Carlos Pellegrini 331, Buenos Aires, Argentina, and agents in principal South American cities.

THE RESINOUS PRODUCTS & CHEMICAL COMPANY

WASHINGTON SQUARE, PHILADELPHIA 5, PA.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending May 5, 1945

STOCKS

	High	Low	Last
A. P. W.	4½	4⅜	4½
Armstrong Cork Co.	49	48	48½
Celotex Corp.	17¼	15¾	17¼
Celotex Corp., pf.	20¼	20	20¼
Certain-Teed Products Corp.	10¼	8¾	10⅛
Certain-Teed Products Corp., pf.	152	149½	152
Champion Paper & Fibre Co.	34⅜	33½	34
Champion Paper & Fibre Co., pf.	112½	111¾	111¾
Congoleum Nairn Co.	33½	30¾	33
Container Corp. of America	29¾	28⅞	29¼
Continental-Diamond Fibre Co.	11¾	11	11⅜
Crown-Zellerbach Co.	23⅛	22⅜	23⅛
Crown-Zellerbach Co., pf.	104	103½	104
Dixie Cup Co.	25¼	22¾	24⅞
Dixie Cup Co.—A.	48¼	48	48
Flintkote Co.	30¾	28⅞	30¾
Flintkote Co., pf.	...	...	...
Robert Gair	6	5¾	6
Robert Gair, pf.	17⅜	17⅛	17¼
International Paper Co.	26⅜	24½	26⅜
International Paper Co., pf.	92½	90⅜	92
Johns-Manville Corp.	117¾	115	117¼
Johns Manville Corp., pf.	...	...	...
Kimberly-Clark Corp.	44½	43½	44½
Mac Andrews & Forbes	32¾	32	32
Mac Andrews & Forbes, pf.	...	...	...
Masonite Corp.	47½	45¼	47½
Mead Corp.	14¾	13⅜	14¼
Mead Corp., pf. A—6%	...	...	...
Mead Corp., pf. B—5½%	101	100	100½
National Container Corp.	15⅜	15⅛	15¾
Paraffine Companies, Inc.	65	65	65
Paraffine Companies, Inc., pf.	...	...	...
Rayonier, Inc.	18¼	17½	17⅜
Rayonier, Inc., pf.	36¾	35⅞	35⅞
Ruberoid Co.	38¼	37	38⅛
Scott Paper Co.	48½	47¾	48½
Scott Paper Co., pf.	108¾	108¼	108¾
Sutherland Paper Co.	33	32¼	33
Union Bag & Paper Corp.	17½	15¾	16⅝
United Paperboard Co.	7½	6⅝	7½
U. S. Gypsum Co.	88	85¼	86½
U. S. Gypsum Co., pf.	190	190	190
West Virginia Pulp & Paper Co.	24¾	23½	24½
West Virginia Pulp & Paper Co., pf.	111½	111	111

BONDS

Abitibi Pulp & Paper Co. 5s '53	107½	104	107½
Celotex Corp. 3¾s '55	103¾	102⅝	103¼
Certain-Teed Products Corp. 5½s '48	...	...	...
Champion Paper & Fibre Co. 4¾s '50	...	...	...
International Paper Co. 6s '55	109	109	109
International Paper Co. 5s '47	104⅜	104¼	104⅜
Mead Corp. 3½s '53	...	...	...
West Virginia Pulp & Paper Co. 3s '54	...	...	...

New York Curb Exchange

High, Low and Last for Week Ending May 5, 1945

STOCKS

	High	Low	Last
Great Northern Paper Co.	37¾	36¾	37⅜
Hummel-Ross Fibre Corp.	7¾	7¼	7½
St. Regis Paper Co.	6	5⅝	5⅞
St. Regis Paper Co., pf.	...	...	...
Taggart Corp.	6¼	6	6

BONDS

American Writing Paper Co. 6s '61	...	...	...

Rayonier Announces Loan

Arrangements have been completed by Rayonier Inc., domestic producer of dissolving pulps, for a 1-15 year serial loan of $9,000,000, it is announced by president Edward Bartsch. Four of the company's banks will take the earlier maturities, with the Mutual Life Insurance Company of New York taking the later maturities.

Proceeds are being used in part to refund an existing term loan and to meet obligations incurred in connection with the recent purchase of timberlands and logging equipment of the Bloedel Donovan Lumber Mills in Clallam County, Wash. Funds also will be provided for improvement of present plant facilities at Hoquiam, Port Angeles and Shelton, Wash., and Fernandina, Fla. This program will enable Rayonier to improve further the quality of its pulps which are used in making rayon, tire yarn, cellophane, photographic papers and other cellulose-base products.

Conditions Favorable for Bathurst

R. L. Weldon, president of the Bathurst Power and Paper Company, told shareholders at their annual meeting that market conditions as to tonnage produced continue favorable, and the company's production is being fully absorbed. Water conditions for the hydro-electric plant had been distinctly more satisfactory so far this year. Woods operations for the winter are complete and their pulpwood supply was now being driven to the mill. Manpower continued to be short, but the quantity cut was sufficient to assure full operations for the plant. Commenting on the Government's White Paper, referred to above, he said it was most significant and encouraging in its statements in regard to industry. Effective realization of the policies outlined, he said, particularly with respect to taxation and export trade, will do much to enable industry and its employees to look forward to the future with confidence. He remarked that the Government's decision in respect to the company's income and excess war profits taxation, and the fixing of what the company can regard as its standard profits, was looked on as reasonably favorable, having due regard to all attendant circumstances. He remarked, however, that the prices for the company's products sold in Canada have remained fixed at levels established in midsummer, 1940, irrespective of the advances in practically every item entering into costs.

Sandy Hill Elects Officers

[FROM OUR REGULAR CORRESPONDENT]

HUDSON FALLS, N. Y., May 7, 1945—The annual meeting of stockholders of the Sandy Hill Iron and Brass Works, Inc., was held last week at which directors and officers were chosen. Among those reelected were Richard C. Tefft, chairman of the board; Frank A. Juckett, president; J. Wesley Joslyn, vice president; Philip J. Riley, treasurer; J. Walter Juckett, secretary. The officers and Charles W. Kellogg.

Union Bag Profits Up

The Union Bag and Paper Corporation for the three months to March 31, reports a net income of $538,637, after provision for taxes and renegotiation of Government contracts, equal to 42 cents a share, compared with $423,236, or 33 cents a share, in the similar period of 1944. Net sales, $11,017,098, against $9,485,930.

N. P. T. Co Nets $2.76

The National Paper and Type Company and subsidiaries for the six months to February 28, reports a net profit of $196,492, or $2.76 each, on 64,392 common shares, against $200,742, or $2.83 a common share, for six months to February 28, 1944.

Scott Co. Nets 47 Cents

The Scott Paper Company for the March quarter reports consolidated net earnings, after provision for preferred dividends, of $315,493, or 47 cents a common share, against $321,602, or 48 cents a share, last year.

Hummel-Ross Earns Less

The Hummel-Ross Fibre Corporation for the twelve weeks to March 24, reports a net income of $50,101, or 10 cents a common share, against $58,137, or 12 cents a share for last year's period.

Draper's

ATLAS OF AMERICAN PAPERMAKING

No. 6 PUBLISHED BY DRAPER BROTHERS COMPANY • CANTON, MASSACHUSETTS

Map copyright by L. D. Post, Inc., New York. American Map Co., N. Y.

HIGH LIGHTS:

The earliest paper mill in Rhode Island was established in 1780 by Samuel Thurber, at Providence, but the industry has never grown extensively in this State, although the art of coating and glazing paper has for many years been a prominent industry in Pawtucket. Here, there are seven of these converting plants. As early as the census of 1820, mention was made of "two paper-staining manufacturies" in Rhode Island. But at the present time the only paper mill in the State is that of Bird & Son, Inc., at Phillipsdale.

Rhode Island, nevertheless, will be remembered in the history of paper manufacture, as having had the first sulphite pulp mill in the United States. In 1882, Charles S. Wheelwright, formerly a member of the firm of George W. Wheelwright & Son, obtained the rights to manufacture sulphite pulp under the Ekman process, which he had observed in Bergvik, Sweden. He organized the Richmond Paper Company, at East Providence to manufacture both paper and pulp.

Associated with him as chemist was the late, celebrated Arthur D. Little, and as mill superintendent, John Luke, later one of the founders of the West Virginia Pulp & Paper Company. It has been authoritatively stated that the sulphite pulp produced by this company was of excellent quality, but difficulties were encountered by these pioneers in securing a practical type of digestor. The cost for repairs on their apparatus ate up the profits so fast that in 1887 the company failed.

Draper Felts for Efficiency

DRAPER BROTHERS COMPANY

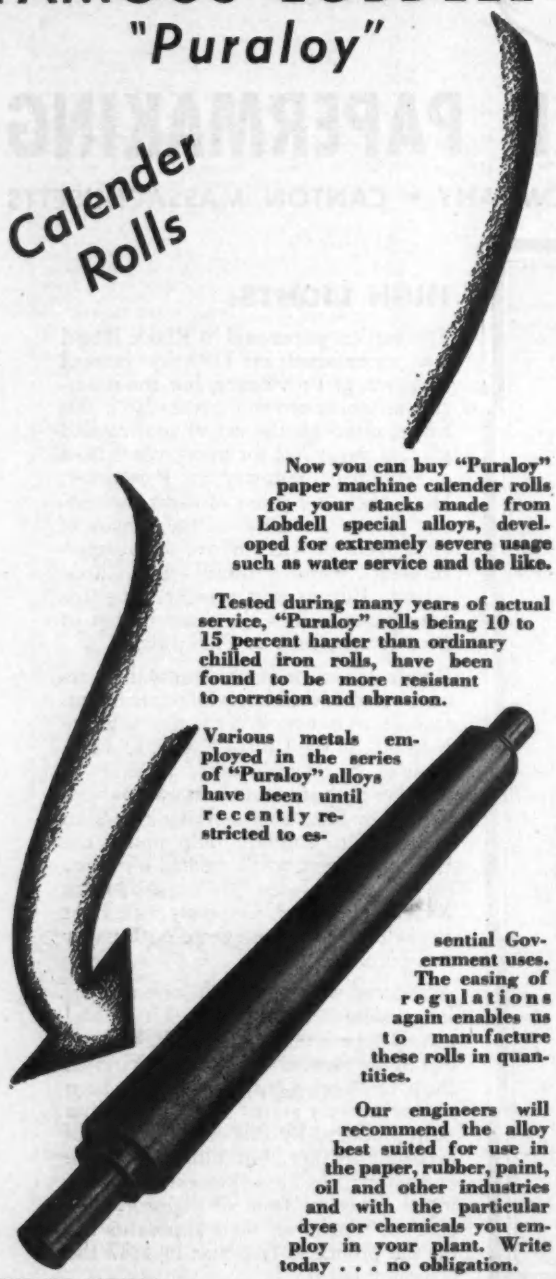
Woolen Manufacturers Since 1856

Canton, Massachusetts

RALPH E. BRIGGS Sales Manager

BRADFORD WEST, PITTSFIELD, MASS. • WILLIAM N. CONNOR Jr, CANTON, MASS. • L. H. BREYFOGLE, KALAMAZOO, MICH. • CHAS. E. BERTSCHY, MILWAUKEE, WIS. • W. I. CAMPBELL, SAVANNAH, GA. • BALFOUR GUTHRIE & CO. Ltd., PACIFIC COAST

AGAIN AVAILABLE . . .
FAMOUS LOBDELL
"Puraloy"
Calender Rolls



Now you can buy "Puraloy" paper machine calender rolls for your stacks made from Lobdell special alloys, developed for extremely severe usage such as water service and the like.

Tested during many years of actual service, "Puraloy" rolls being 10 to 15 percent harder than ordinary chilled iron rolls, have been found to be more resistant to corrosion and abrasion.

Various metals employed in the series of "Puraloy" alloys have been until recently restricted to essential Government uses. The easing of regulations again enables us to manufacture these rolls in quantities.

Our engineers will recommend the alloy best suited for use in the paper, rubber, paint, oil and other industries and with the particular dyes or chemicals you employ in your plant. Write today . . . no obligation.

SEND FOR CATALOG . . .

We are interested in your post war needs, and urge you to call upon us for information and consultation. Our catalog presents a detailed description of up-to-date machinery for the paper making and allied industries. Write for a copy today—on your letterhead, please.

LOBDELL

COMPANY ESTAB. 1836 **WILMINGTON 99, DEL.**

Built and sustained upon the rights to FREE, COMPETITIVE PRIVATE ENTERPRISE guaranteed by the Constitution of the United States

New Improved Roll Grinding Machines • Rolls • Calender Stacks • Roll Calipers

THREAT TO PAPER INDUSTRY

(Continued from page 7)

commodity came anywhere near equalling paper and pulp. During that same period the net dollar exchange created by the absorption of imported paper and pulp by the paper market of the United States was $1,635,889,799. Total imports in these years were $1,957,438,412 and exports only $321,548,613, Mr. Brown said.

The paper and pulp industry has no quarrel with the argument that we must have more international trade if there is to be peace on earth and that the United States cannot, year after year, export unless it imports in substantially equal dollar volume so as to create dollar exchange with which payment can be made for our imports; but the industry does believe that the tremendous paper imports created by earlier trade agreements at the expense of its American paper industry prove that the industry has already contributed far more than its share toward this objective, and that the American people have no desire further to displace American paper and pulp workers and lose a basic American industry in an attempt to reach this goal, Mr. Brown concluded.

Charges Illegal Selling

The Harrisburg District Office of Price Administration filed an action for an injunction and treble damages in the United States District Court for the Middle District of Pennsylvania against the Maple Press Company Inc., of York, Pa., for selling "printers' waste" from its plant in excess of legal ceiling prices, it was announced by Daniel P. Woolley, Regional OPA Administrator recently.

The defendant is charged with having sold "printers' waste" at the prices prescribed for the various component grades which were determined by the buyer after receipt.

"Under MPR 30 which controls the sale of wastepaper," Mr. Woolley stated, " 'printers' waste' must be sold as No. 1 Mixed Paper unless it is sorted by the seller into separate grades."

"Printers must abide by the provisions of the wastepaper regulation MPR 30 when they sell commodities covered by it," declared Mr. Wooley. "Enforcement action in this field is contemplated wherever the facts so warrant."

To Be Traffic Manager for M. & O.

Franklin E. Hufford of Washington, D. C., was appointed as traffic manager of Minnesota and Ontario Paper Company and its subsidiaries, to succeed R. J. Henderson who will retire May 28, after 28 years with the company, it was announced by R. H. M. Robinson, company president.

Mr. Hufford comes to Minneapolis with a varied experience in the field of traffic, and his most recent work was with the Forest Products Bureau of the War Production Board in Washington in the capacity of transportation consultant. In this work he handled transportation matters for the pulp, pulpwood, paper and paper board divisions of WPB.

Mr. Hufford was born in Altoona, Pa., and from 1913 to 1926 was in the traffic department of the Pennsylvania Railroad, going to West Penn Cement Company as industrial traffic manager from 1926 to 1933.

In 1933 he gained his first experience in the paper industry with Castanea Paper Company, and in 1941 joined the War Production Board in Washington.

A New Development in Paper

Purchases of a newly-developed paper and burlap lamination tarpaulin by the Jersey City Quartermaster Depot will save substantial quantities of cotton duck, a critical war material, according to Col. George F. Spann QMC, Commanding Officer. It is anticipated that the savings of cotton duck will amount to millions of yards during 1945 and, at the same time, it will be possible to increase the supply of waterproof coverings available from front-line use. Development of the new tarpaulin was necessitated by the inability of the cotton textile industry to maintain a sufficient rate of production to meet military requirements of cotton duck.

Tests conducted by the Quartermaster Corps indicate that good durability can be obtained with the new materials which are immediately available in large quantities. Cost of the new tarpaulin which requires 72 yards of material will be much less than that of cotton duck. In addition, the reduction in both weight and bulk combine to conserve shipping space and provide a unit which can be easily handled by two men. Paper laminated to burlap with a special asphalt has provided satisfactory protection for the packaging of many Quartermaster Corps supplies shipped to all parts of the world, but this is the first time these materials have been used for continuous exposure under the wide variety of weather conditions encountered in fighting a global war.

Current specification for the new tarpaulins provides for two combinations of materials, one having two layers or plies of paper, the other a single sheet. Olive-drab, high wet-strength kraft, the paper weighs 40 pounds per ream (24 x 36-500) and is creped so that the final weight is 48 pounds per ream. Creping processes evolve a high flexibility, which is definitely advantageous. Asphalt, which does not crack at low temperatures or bleed at high temperatures, is used as an adhesive and an additional waterproofing agent, and is applied at a rate of more than 100 pounds per ream. Burlap fabric is a standard product 40 inches in width and has a minimum weight of 10½ ounces.

Rolls of the new type tarpaulin material are shipped to tarpaulin manufacturers designated by the Jeffersonville Quartermaster Depot. In these plants, five widths of laminated material are sewn together and the turned edges are equipped with grommets. Finished paper-asphalt-burlap tarpaulins are similar to those of cotton duck, and conform to standard Quartermaster design.

According to the Office of The Quartermaster General, initial development work on the new tarpaulin has resulted in substantial improvements over commercial types of materials previously available. By War Department request, the Institute of Paper Chemistry has initiated a study of the treatment of this paper to improve its weather resistance.

G. Richardson Goes To Washington

Grant Richardson of Hammermill Paper Company, who has recently been appointed as assistant to the director of the Paper Division, Forest Products Bureau, War Production Board, expected to assume his duties in Washington on May 7.

Mr. Richardson takes with him a background of more than 30 years experience in paper manufacture and selling. For several years he has been district sales manager for the Eastern territory and export manager for both Hammermill Paper Company, Erie, Pa. and Grays Harbor Pulp and Paper Company, Hoquiam, Wash. Mr. Richardson has been serving also as a member of the Paper Advisory Board of the Foreign Economic Administration in Washington.

WITCO CARBON BLACK No. 11

A dustless pelleted black especially produced for paper manufacture. Can be added directly to the beater in the shipping bag. Disperses readily and evenly to impart uniform black color to paper or cardboard. Samples available on request.

WITCO CHEMICAL COMPANY

MANUFACTURERS AND EXPORTERS

[Formerly Wishnick-Tumpeer, Inc.]

295 MADISON AVENUE, NEW YORK 17, NEW YORK

Boston • Chicago • Detroit • Cleveland • Akron • London

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.
Henry J. Berger, Editor

COMING EVENTS IN PAPER INDUSTRY

New England Section. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

Delaware Valley Section. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

Lake States Section. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

Empire State Section. Technical Association of the Pulp and Paper Industry—Second Thursday of each month at the Woodruff Hotel, Watertown, N. Y.

Chicago Professional Paper Group. Third Monday of each month except July and August at Chicago Bar Association, Chicago, Ill.

VICTORY IN EUROPE

Victory Day in Europe has come after a long and bitter conflict. The price of that victory can be evaluated high in terms of expenditures in time and toil; but beyond price in human reckoning must remain the millions of lives lost, the appalling sacrifice of men and women who have died in the greatest catastrophe the world has ever experienced. The Allied Nations have fought a superb fight against aggression. Now that hostilities are ended in Europe it is the hope and prayer of most of the peoples of the world that, in the memory of those who have paid the supreme sacrifice, an enduring structure of peace may in time be built to prevent the occurrance of future wars. The Allied Nations have won this titanic struggle because they united to achieve a common objective. It is not too much to ask or expect that many more nations than the great powers may in the future closely unite to maintain the common objective of peace.

Allied victory in Europe is significant in many respects. The long war has demonstrated how peoples of many nationalities can resolutely face and endure the greatest hardships. It has clearly shown how the minds of men can be stimulated to invent and manufacture the vast number of items required in a far-flung modern war. War is a test and a challenge for all to cooperate and contribute their best support to a common cause. With the end of the European war, America must continue its united front to win victory in Asia. Victory has now been partially achieved, perhaps the major battles have been fought, but more fighting has yet to be done to defeat Japan. Total victory is near. United effort will more speedily complete total victory.

With the shift of the world war to one front and the concentration of military forces against Japan, plan for "Period One" has emerged. The Committee on Period One appointed by Chairman J. A. Krug of the War Production Board has completed a program for the shift from a two-war conflict to a one toe war. This has been termed Period One. It starts from VE-Day and ends on T-Day some five months later and on the tentative date of September 30. In this blueprint, formulated to attain the objectives embodied in the Byrnes report, the revocation of orders L, M, P, E, and U, will become effective on V-E Day, and easement of the Controlled Materials Plan, or possibly some eliminations, will be made where surplus of steel, copper and aluminum exist above CMP Orders. On T-Day, it is expected that the Controlled Materials Plan will be eliminated completely, to be replaced by a priority rating method; MM for military goods and CC for essential civilian requirements.

An important feature of the Period One plan is that the objective sought is to provide equitable rates of manufacturing output for reconverted industries. The committee emphasizes that resumption of civilian goods must be relatively high to avoid deficit operations which would almost certainly occur if production is on a relatively low level. Estimates for break-even production rates for seventy-two civilian industries have been prepared. Thus, cutbacks of war orders and the resumption of civilian goods production, will be planned to reach minimum production ratios as speedily as practicable. Under the proposed plan, seventy-nine munition production areas are classified into three groups. As necessity demands, war orders will be shifted from group to group, dependent upon the ability of plants to handle the volume of military and civilian goods needed. The committee report recommends the minimum of WPB restrictions and proposes to provide special reconversion assistance to small businesses and new enterprises. Planning of civilian goods production should be terminated on T-Day and the committee advocates only the most necessary use of CC rating for essential civilian goods after T-Day.

The paper industry, unlike the automobile industry to cite a single other industry for comparison, has no plant reconversion problem, but it will require a considerable volume of replacements and extensive repairs of machines and equipment for its complete rehabilitation for the post-war years. The paper industry is currently maintaining a high production ratio of around 90% and until the Controlled Materials Plan is eliminated, it is uncertain if the plans of many mills for betterments, etc., can be fully realized for some time.

World-wide demand for pulp and paper is expected to continue relatively heavy for many months after total victory, taking into consideration, of course, the relief to the extremely current short supply afforded by the resumption of Scandinavian exports. Many types of paper packaging may be expected to be continued, even after the formerly used and preferred types of containers, as tin and glass, are again available. In the near future larger amounts of the stronger papers, such as kraft wrapping, will undoubtedly be consumed and the trend

for larger quantities of fabricated, laminated and special processed papers is now quite plainly discernible.

The trend of increasingly large amounts of paperboard is also clearly indicated in the wide current utilization of this highly satisfactory product, The heavy requirements and exacting demands of the war have resulted in a substantial increase in the use of paperboard and allied products. In some instances, paper has performed a great service of a temporary war nature, but very large gains have been made and the use of containerboard and solid fiber for packaging and shipping in the future promises to be greatly expanded. A far more extensive utilization of the waste products of the wood pulp manufacture is forecasted. Tall oil, to mention but one by-product, has done much to relieve the acute shortage of linseed oil, especially in the last year or two when little if any linseed oil has been available for the manufacture of paints. The war has stimulated research in almost every industry and technological advances in the paper industry have been very substantial. When suitable replacements and materials are freely available, a period of great activity in the modernization of plants must inevitably follow to insure a fair profit in the highly competitive days of the post-war era.

Heads Joint Paper Board

R. M. Fowler, recently appointed full-time president of the Canadian Pulp and Paper Association, has been elected chairman of the Joint Executive Board of the Newsprint Association of Canada and the Canadian Pulp and Paper Association.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1945		Corresponding Weeks—1944	
Mar. 24	92.1	Mar. 25	88.5
Mar. 31	88.9	Apr. 1	85.7
Apr. 7	86.8	Apr. 8	86.2
Apr. 14	87.4	Apr. 15	84.7
Apr 21	90.7	Apr. 22	89.7
Apr. 28	*87.0*	Apr. 29	89.8

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	88.7	88.5	88.1	87.6	88.7	89.8	80.3	90.6	88.2	92.5	90.6	82.4	88.1
1945	86.7	89.4	90.2	*88.1*									

COMPARATIVE YEARLY SUMMARIES

	1938	1939	1940	1941	1942	1943	1944	1945
Year to Date	67.5	80.2	85.3	90.9	102.7	88.6	88.2	*88.3*
Year Average	71.5	83.4	85.6	97.4	90.4	87.8	88.1	

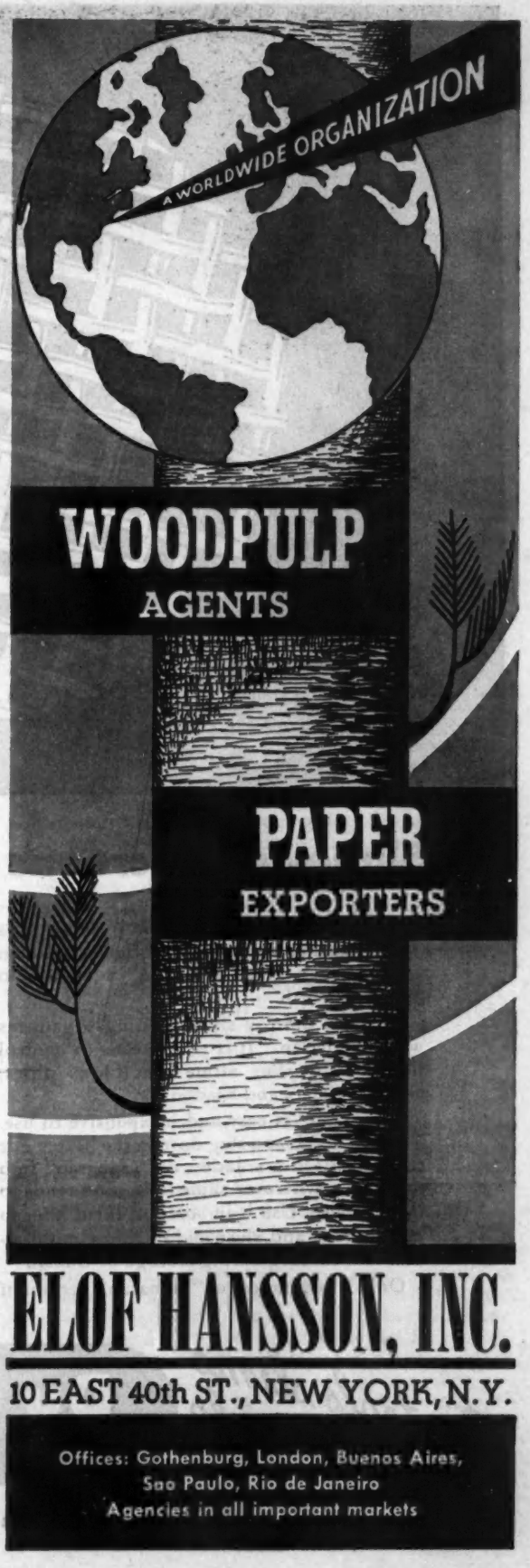
*Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

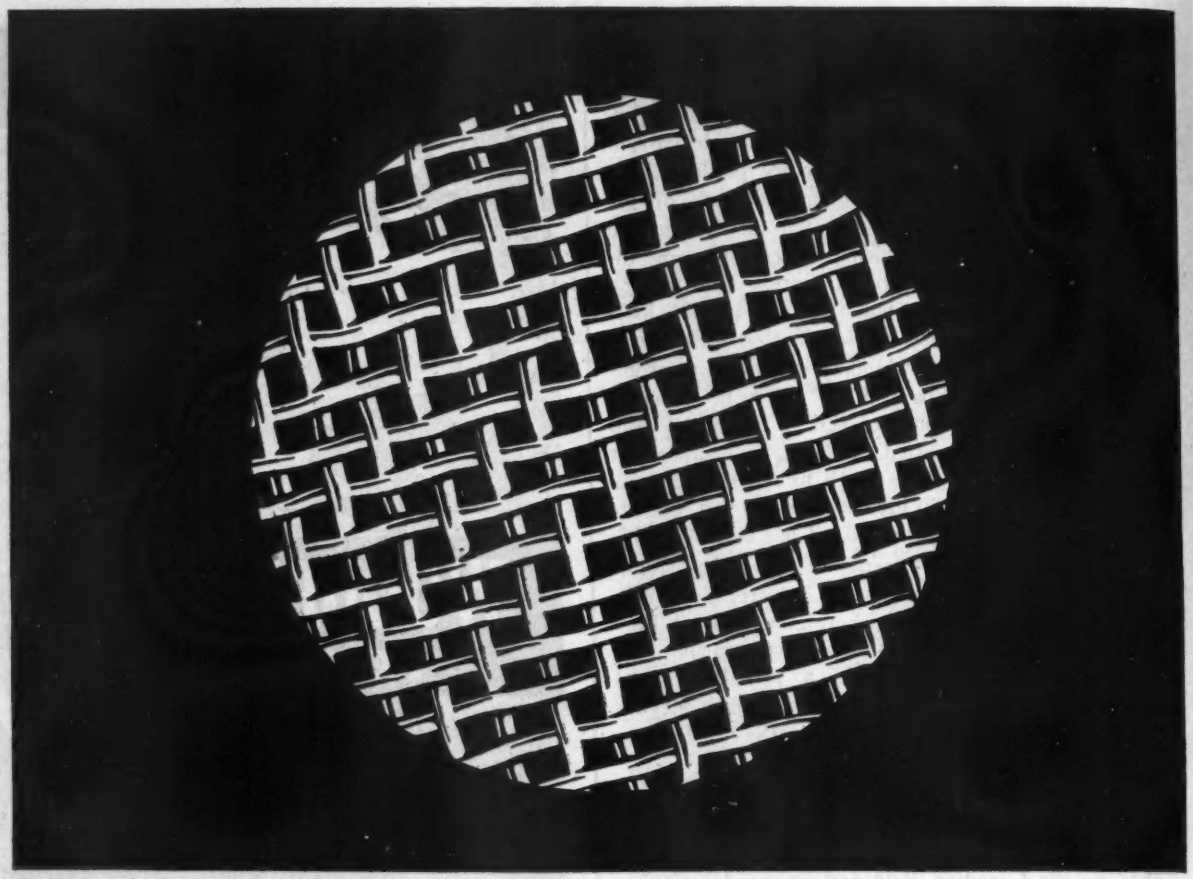
PAPERBOARD OPERATING RATIOS†

Current Weeks—1945		Corresponding Weeks—1944	
Mar. 24	99	Mar. 25	97
Mar. 31	100	Apr. 1	93
Apr. 7	92	Apr. 8	94
Apr. 14	97	Apr. 15	92
Apr. 21	98	Apr. 22	98
Apr. 28	99	Apr. 29	98

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1944	90	86	95	96	96	96	85	96	92	95	93	85	93
1945	91	95	97	97									

†Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.





Slime-free screens . . . available to all

IS SLIME CLOGGING YOUR MACHINE SCREENS . . . causing weak spots . . . holes . . . torn sheets? Then give "Lignasan" a chance to prove its worth.

You can destroy slime-forming organisms with "Lignasan." It is your means to control the *profit-stealing* slime that clogs pipes, screens, rifflers and headboxes.

"Lignasan" is easy and inexpensive to use. You can add it as a slug dose in the beater—or you can bleed a solution of "Lignasan" into the system wherever slime formation tends to be excessive. Use it in solution form, too, to protect laps and slush pulp against mold attack and souring during storage or transit.

Only 3 to 8 ounces of "Lignasan" per ton of fiber, dry basis, are usually needed to control slime effectively and preserve pulp.

With time important and manpower scarce, any agent that reduces the frequency of cleanings and washups is a boon to mill operators. *And* when that economy of time is combined with simultaneous protection of material, no operator can afford to remain without its aid. If you're one of those operators who have not yet tried this production aid, get the facts today and learn how "Lignasan" can help *you*, too. Write our nearest branch office or E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, Wilmington 98, Delaware.

PAPER HELPS WIN VICTORIES TOO

Controls slime
Preserves pulp

Du Pont Lignasan
REG. U. S. PAT. OFF.
BACTERICIDE AND FUNGICIDE

DU PONT
BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

Section of the
TECHNICAL ASSOCIATION
OF THE PULP & PAPER INDUSTRY
122 E. 42nd St., New York 17, N. Y.
Edited by R. G. Macdonald, Secretary

Present and Possible Uses for Tall Oil*

By William H. Jennings[1]

Abstract

As very little was known about the properties of tall oil until recent years this product did not enjoy a very extensive market. Because of the fat shortage caused by World War II, tall oil was subjected to much research and was found to be adaptable in many processes which until recently were thought to be impractical. Several of the important uses are listed as well as some of the possible future uses of the rosin and fatty acids from tall oil once the process for separation of these components is perfected on a commercial scale. The chemical composition of tall oil is variable over wide limits and a research program is now underway to determine the limits of variation under various conditions. Some of the findings to date are discussed.

Prior to World War II, tall oil, both crude and refined, had only a limited market because of the reluctance of many consumers of fats to try to adapt this material into their formulas. Many of the consumers who did give it a trial were not very successful in obtaining results comparable with their previous experiences with natural fats. As the composition of tall oil varies over wide limits, it is easily understood why so many difficulties were encountered when a processor of fats, knowing very little about tall oil, tried to substitute it for materials with which he was thoroughly familiar.

As a large percentage of the fats used in this country are normally imported, the country was faced with a critical fat shortage when it went to war against Germany and Japan. Tall oil was immediately subjected to much research by both the manufacturers and consumers and many uses were found for this material that were of direct benefit to the war effort. Realizing its importance as a source of fatty acids, the government encouraged increased production.

Present Uses

Some of the present important uses of tall oil are in the preparation of soluble oils by sulphonation, manufacture of industrial soaps, as an addative to laundry soaps where a certain amount of rosin is desired, preparation of asphalt emulsions, and concentration of phosphate and other ores by flotation. Because of the nature of its constituents, tall oil lends itself to easy sulphonation resulting in a product which can satisfactorily replace a considerable amount of oleic acid in the preparation of soluble oils. In fact, the addition of sulphonated tall oil to soluble oils made from oleic acid have a tendency to stabilize the mixture because the rosin acids present in the tall oil lower the interfacial tension between the oleic acid soap solution and mineral oil. In the manufacture of so-called cold water or casein paints, sulphonated tall oil was found to be an ideal emulsifying agent.

It is predicted that large amounts of tall oil will continue to be used for these purposes after the natural fats again become available because the consumer has learned to use it as a low priced source of fatty and rosin acids. As a result of extensive research during the past two years caused by the sudden increased interest in this product, the material manufactured today is superior in many respects to that produced a year or two ago. As the quality of refined tall oil is gradually improved, its markets will naturally be expanded. Improvements in refining procedure resulting in a more uniform and stabilized product will result in a fairly stable market for this material in the future. The present consumers of tall oil, now having the necessary know-how to incorporate it in their formulas, will give careful consideration before replacing it with higher priced fats.

Future Possibilities

Although tall oil itself is a low priced commodity, when the chemical analysis is examined it is seen that every constituent if separated in a substantially pure form is worth from three to six times the value of the crude oil. Much work has been done on the separation of the components and several attempts have been made to accomplish this separation on a commercial scale; however, none of these attempts have been fully successful. By fractional distillation under vacuum a fatty acid fraction containing up to 95% fatty acids and 5% rosin acids and a rosin fraction consisting of approximately 95% rosin and 5% fatty acids are obtained. This process results in a relatively high still residue known as tall oil pitch, and it is questionable whether this process will prove to be economically sound on a low priced fat market. Although these fractions are now commanding a good price when competition with natural fats returns the market will be more restricted because of the contamination with 5% or more of impurities and will have to be sold at a discount under natural fat prices. In the writer's opinion, it is only a matter of time before a process for separation will be developed that will prove commercially feasible. Once

* Presented by title at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] Member TAPPI; Manager of Chemical Div., Chesapeake-Camp Corp., Franklin, Va.

this separation has been accomplished, tall oil will no longer be regarded as a substitute for cheap fats but, because of the value of the separated constituents, will be the source of raw materials for higher priced products.

The composition of tall oil varies with the species of wood from which it was obtained, the length of time the wood was stored before processing, the season of the year in which it was cut, variations in the procedures for cooking the wood chips, and methods for converting the black liquor soap skimmings into the oil. The fatty acid fractions have been found to consist of linoleic acid 50 to 80%, linolenic acid 5 to 15%, oleic acid 17 to 45%. A program is now under way to obtain information on the variable physical and chemical properties of tall oil made from skimmings produced in different regions of the country during the various seasons of the year. The very fact that the fatty acid fraction contains a high percentage of linoleic acid suggests that it has interesting possibilities in the manufacture of synthetic drying oils. By changing the linoleic acid over to its conjugated isomer and esterifying with glycerol, a drying oil is obtained which surpasses linseed oil in its drying properties. Many new fields will be open to the separated fractions; the fatty acids being consumed by the manufacturers of edible oils, alkyd resins, high grade soaps, soluble oils, textile oils, cutting oils, and so forth; the rosin acids will be suitable for manufacture of rosin size for use in the paper industry, for conversion into various rosin esters, soaps, and so forth.

In addition to the rosin and fatty acids, about 3 to 4% of sterols may be obtained. At present, there is no large use for this material; however, as soon as it is made available in quantity, no doubt, important uses will be found.

TAPPI Notes

Carl E. Flander, formerly of the Mead Corporation is now in the Technical Service Department of the Jay Madden Corporation, 30 Rockefeller Plaza, New York, N. Y.

Gosta Hall, formerly of Svenska Cellulosa A/B is now sales manager for Korsnas Sagverka A/B, Gavle 2, Sweden.

George D. Bearce is now vice president of the Maine Seaboard Paper Company, Bucksport, Maine.

Henry Perry, formerly of the J. P. Lewis Company is now with Case Bros. Inc., Manchester, Conn.

The TAPPI Plastics Committee will meet at the New York State College of Forestry, Syracuse, N. Y. on May 15-16, 1945. There will be round table discussions of melamine resins, use of paper laminates, high-strength laminates, pulp for reinforced plastics, pulp preforms and analysis and identification of plastics.

The TAPPI Empire State Section will meet at the Hotel Cornwallis, Cornwall, Ont., on May 18-19, 1945.

The TAPPI New England Section will meet at the Norwich Inn., Norwich, Conn., on May 25-26, 1945.

The C.P.P.A. Technical Section will meet at the Chateau Frontenac, Quebec, P. Q. on June 18-20, 1945. (Note change in dates).

The TAPPI Lake States Section will meet at the Conway Hotel, Appleton, Wis., on Saturday, June 2, 1945.

Personal Relations

The Ronald Press Company has just issued a book entitled Personal Relations by J. E. Walters, personnel relations consultant McKinsey & Company, formerly vice president, personnel and labor relations, Revere Copper & Brass, Inc. (537 pp. 6 x 9). The book endeavors to set forth both principles and practice in the field of personnel relations as it is today. It includes in its scope the varying phases of personnel relations as they are determined and influenced by workers in labor unions; managements; the Government; labor - management cooperation; individual employees; and personnel relations techniques and procedures. The material in the volume is based on the author's inspection of 152 industrial and business concerns and his consultation work in many companies. Among the subjects covered are: labor unions in a democracy, management of personnel relations, wages, and hours, employment, job evaluation, personnel ratings, labor turnover, promotions and transfers, research and records, training and education, health activities, morale surveys, employee service work, women in industry, Government regulation, social security, labor-management cooperation.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y., at $4.50 per copy.

The Industrial Supervision

The Ronald Press Company recently issued a book entitled The Industrial Supervision by John M. Amiss, Director of Industrial Education, Chrysler Corporation and Traver C. Sutton, Science Dept., Cass Techical High School, Detroit (243 pp. 5 x 8). It is prepared for all supervisors, both experienced and inexperienced, who want to improve their judgment, skill and understanding of their work. Among the subjects covered are general supervisory responsibilities, attitude toward labor costs, discipline and morale, women in industry, proper placement of men, understudies, qualifications of a supervisor, training in industry, leadership characteristics, cooperation, attendance and punctuality, job and man analysis, industrial safety, fire protection and prevention, time study, labor turnover, planning, overhead expense and ethics of supervision.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y., at $3.00 per copy.

Fats and Oils

The Reinhold Publishing Company has just published Fats and Oils: An Outline of Their Chemistry and Technology by H. G. Kirschenbauer, Research Chemist, Colgate - Palmolive - Peet Company. This book will be of interest to producers of tall oil and users of certain waxes and oils in the paper industry. (154 pp. 6 x 9¼.)

Among the subjects covered are: constituents and components of fats and fatty acids, glycerol, physical and chemical properties, analytical methods, hydrogenation, sulphonation, linoleum, tall oil, vegetable and animal waxes.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd street, New York 17, N. Y., at 2.75 per copy.

The Physical Evaluation of Straw and Other Agricultural Residue Pulps*

A Proposed Method

By J. O. Younger[1] and S. I. Aronovsky[2]

Abstract

A proposed laboratory method for evaluating straw and other agricultural residue pulps is outlined. It involves defibering, washing, and testing of the cooked raw material. The relationship between the physical properties (TAPPI Standards) of handmade and machine-made strawboard was established.

Laboratory physical evaluation of pulps has played a very prominent role in the rapid advancement of the wood pulp industry by increasing and controlling the uniformity of product, by the establishment of standards, and by the development of new products. The straw consuming industries, on the other hand, use laboratory methods to only a very limited extent, doing most of their experimental development on a mill scale requiring several tons of material per test. Experimentation on a mill scale has some advantages, but it is costly in time and materials, and the resulting tendency is to approve or condemn a new material or technique on generally inconclusive evidence. It is felt that the development of rapid laboratory methods for evaluating straw and other agricultural residue pulps would be of considerable benefit to the straw pulp industries and should result in increased utilization of agricultural residues for pulp and paper. This report deals with preliminary work on the physical evaluation of straw pulp for strawboard.

The apparatus used in this work consisted mainly of a 12.5-pound iron-tub washer-beater (equipped with a washer drum covered with 80-mesh wire), a 1.5-pound standard Valley beater, a British sheet-making unit, and various testing machines for determining freeness, caliper, bursting strength, tear resistance, and tensile strength. With the exception of the larger beater and the freeness tester (Schopper-Riegler), the apparatus used were in accordance with TAPPI standards. The TAPPI methods of testing were used wherever possible.

* Presented by title at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] Paper Technologist, Pulp and Paper Section, Agricultural Residues Division,[3]

[2] Member TAPPI; Chemical Engineer, in charge of Pulp and Paper Section, Agricultural Residues Division.[3]

[3] Northern Regional Research Laboratory, Peoria, Ill. One of the laboratories of the Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture.

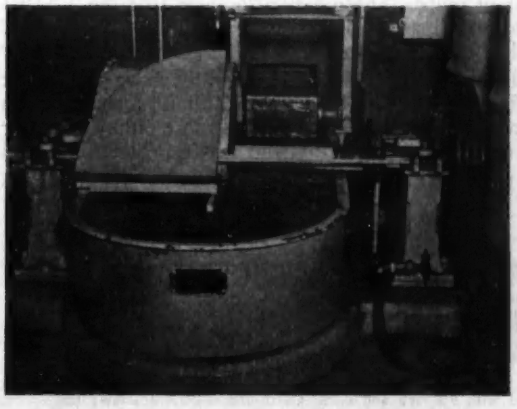


FIG. 1
Washing Straw Pulp in Beater

Development of Proposed Method

Based on the washing and beating procedures used in commercial strawboard mills and on the equipment available at this laboratory, the following washing and beating techniques were adopted, after some orienting runs were made to determine the time, amount of wash water, roll clearances, *et cetera:*

The beater roll (diameter 15 inches; peripheral speed 1570 feet per minute) was raised to a clearance of 0.020 inch from the bed plate, and sufficient water was added to obtain fairly rapid circulation. The cooked straw (about 6.5 pounds, dry basis) from commercial or laboratory digestions was added to the water as rapidly as possible without "choking" the beater, and circulation was continued until the pulp slurry appeared to be uniformily defibered as evidenced by lack of undefibered pieces of straw. Water was added as needed during this disintegration period, after which the pulp consistency was adjusted to approximately 3%.

The roll clearance of 0.020 inch was used to reduce to a minimum the hydrating and cutting action of the beater. It was found that circulating for 75 minutes with a clearance larger than 0.010 inch had practically no effect on the subsequent physical properties of the pulp. The period of disintegration varied, of course, with the material and with the degree of cooking it had received.

After the preliminary disintegration, the roll clearance was reduced to 0.003 inch, and the circulation was continued for 10 minutes. This action broke up the fiber bundles still further and cut them to such an extent that they would felt readily to form a sheet. At the same time the fines and chemical residues within the fiber bundles were liberated for more complete removal by washing.

The beater roll was then raised to a clearance of 0.010 inch or slightly higher, and the washing cylinder was lowered into the stock. Fresh water was added, the level in the beater being kept fairly constant throughout the washing procedure (Fig. 1). About 200 pounds of fresh water (approximating one complete change of water) was used for washing. The effluent from the washing cylinder was collected in a tared container. At the end of the washing period the beater was stopped, and the contents were washed into another tared container.

The washed pulp was diluted to approximately 2% consistency, weighed, mixed thoroughly, and sampled to determine the actual consistency. The sample was formed into a pad on tared filter paper in a Büchner

funnel, dried, and weighed. The quantity of washed pulp, dry basis, was thus obtained.

The effluent from the cylinder washer was weighed, mixed thoroughly, and sampled. The samples were evaporated to dryness and weighed. The yields of fines obtained in this manner were somewhat high, since they included dissolved solids of the water itself as well as the soluble and colloidal material present in the cooked residues. A more accurate method was adopted later; in this the sample was centrifuged, and only the settled solids were washed, dried, and weighed.

The total yield of digested straw is taken as the sum of the washed pulp and the settled solids from the washer effluent.

A quantity of the washed pulp slurry (equal to 360 grams dry pulp) was processed in a standard Valley beater, in accordance with TAPPI Standard T 200 m-43, and formed into handsheets, according to TAPPI Standard T 205 m-42. The freeness was determined with a Schopper-Riegler tester.

After the handsheets were seasoned at 70°F. and 50% relative humidity, their physical properties were determined by the following TAPPI methods: Bursting strength, T 403 m-41; tensile strength, T 404 m-41; and tearing resistance, T 414 m-42. The thickness was determined with a Schopper automatic micrometer.

Results and Discussion

Four pulps, made under practically identical laboratory cooking conditions (6% CaO, 1.5% NaOH, 5 hours at 140°C.), were processed in accordance with the procedure described. The results are given in Table I. These cooks were made from one batch of sound wheat straw. The data on yield are in good agreement and equal to the yield obtained by drying the whole digested residue without predisintegration and washing in the beater. The physical testing data on these four cooks are also in very good agreement. These results indicate that, with due consideration for the materials involved, the proposed technique of evaluating agricultural residue pulps, for utilization in corrugating and other board products, has a fairly high degree of reproducibility and precision.

The application of this evaluation method to commercial straw pulp corroborated the data obtained with the laboratory-prepared material. Two samples of commercially digested straw were used. One came from the pit immediately after being discharged from the rotary cooker; the second, from the same cook, was taken from the beater just prior to discharge of the stock into the beater chest. The first sample was disintegrated, washed, and tested for physical properties by the procedure outlined above, while the second was tested directly without preliminary washing. The data, assembled in Table II and shown graphically in Fig. 2, indicate that the proposed laboratory method of disintegrating and washing the digested material has practically no effect on the properties of the resultant pulps. These data also show that the TAPPI beater-evaluation method is applicable to coarse straw pulps, as well as to fine wood and rag pulps.

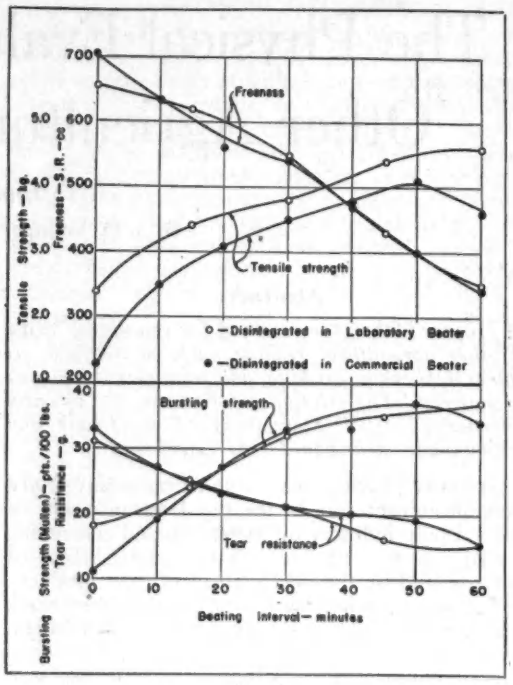


FIG. 2

Strength Tests on Commercial Cooked Straw, Disintegrated in Laboratory and Commercial Beaters

TABLE II.—EFFECTS OF LABORATORY AND COMMERCIAL WASHING AND BEATING TECHNIQUES ON THE PHYSICAL PROPERTIES OF STRAW PULP

Material	Beating Interval, min.	Freeness (Schopper-Riegler), ml.	Basis Weight, 25×40—500, lb.	Bursting Strength, pt./100 lb.	Tensile Strength, kg.	Tear Resistance, g.	Density, g./cc.
Commercial straw pulp disintegrated and washed by laboratory method	0	655	47.3	18	2.4	31	0.32
	15	620	47.2	24	3.4	25	0.38
	30	550	47.4	32	3.8	21	0.42
	45	430	47.3	35	4.4	16	0.50
	60	350	46.9	37	4.6	15	0.49
Same pulp disintegrated and washed in commercial equipment	0	705	45.8	11	1.3	33	0.30
	10	635	47.0	19	2.5	27	0.36
	20	560	47.6	27	3.1	23	0.42
	30	540	48.2	33	3.5	21	0.47
	40	470	47.4	33	3.8	20	0.47
	50	400	47.9	37	4.1	19	0.50
	60	340	46.6	34	3.6	15	0.48

Laboratory handsheets generally have somewhat different strength characteristics than paper made on a commercial machine from the same pulp. In order to determine the relationship between handmade and

TABLE I.—EFFECT OF PROPOSED WASHER-BEATER METHOD FOR EVALUATING STRAW PULP FOR STRAWBOARD

Cook No.	Disintegration (0.020 in.)[1] min.	Beating (0.003 in.)[1] min.	Washing (0.010 in.)[1] min.	Wash Water lb.	Yields (Basis Straw) Washed Pulp[2] %	Fines[3] %	Total %	Physical Properties—at Maximum Burst Beating Interval min.	Freeness (Schopper-Riegler) ml.	Bursting Strength pt./100 lb.	Tensile Strength kg.	Tear Resistance g.	Density g./cc.
241	15	10	40	200	75.3	15.0	90.3	30	460	44	5.1	21	0.39
254	20	10	75	225	74.5	16.9	91.4	45	380	49	4.9	21	0.39
259	10	10	45	236	75.7	15.1	90.8	45	380	46	4.9	17	0.41
260	15	10	45	207	76.5	14.8	91.3	60	255	45	4.9	17	0.41
Average				217	75.5	15.4	90.9			46	5.0	19	0.40

[1] Clearance between roll and bed-plate in washer-beater.
[2] Washed pulp contained approximately 10% ash and 3% Ca, as compared with 9% ash and 0.3% Ca in the uncooked straw; the excess Ca was equivalent to about one-half of the Ca used for cooking.
[3] Includes part of cooking chemical and soluble and colloidal products of straw digestion. Centrifuge method reduced these values to approximately 6%.

TABLE III.—THE PHYSICAL CHARACTERISTICS OF MACHINE-MADE AND HANDMADE STRAWBOARD

	Laboratory Handsheets						Machine-Made Strawboard							
									Tear Resistance			Tensile Strength		
Mill No.	Freeness (Schopper-Riegler), ml.	Caliper, 0.001 in.	Density, g./cc.	Tear Resistance, g.	Tensile Strength, kg.	Bursting Strength, pt./100 lb.	Caliper, 0.001 in.	Density, g./cc.	Machine Direction, g.	Cross Direction, g.	Average, g.	Machine Direction, kg.	Cross Direction, kg.	Average, kg.	Bursting Strength, pt./100 lb.
1 [1]	765	14.3	0.41	92	3.2	13	10.9	0.60	63	106	85	8.4	1.8	5.1	19
2	595	13.8	0.42	81	5.9	26	9.5	0.64	56	78	67	5.8	2.4	4.1	17
3	780	11.8	0.48	93	6.1	26	9.5	0.61	59	79	69	6.8	2.2	4.5	19
4	590	12.4	0.44	134	7.1	40	11.0	0.58	99	129	114	9.3	3.2	6.3	26
5	565	12.4	0.45	93	6.1	26	9.2	0.71	74	97	86	6.8	3.8	5.3	17

[1] Sample from cylinder vat received in air-dry condition.

machine-made strawboard, samples of stock were obtained from the cylinder vats of several strawboard mills and made into handsheets. Samples of machine-made board from the same furnishes were also obtained. The data on the testing of these products are given in Table III. It is evident that the handsheets gave consistently higher values for tear resistance and tensile and bursting strength, and lower values for density. The lower density was expected, since the handsheets were not calendered. The apparently anomalous results with the paper from mill No. 1 may have been due to the fact that the vat stock was air-dried before shipping to this Laboratory; it is known that the reworking of dried beaten stock gives different results from those obtained with the wet material or with stock not beaten before drying.

The ratios of the physical values of the two types of paper are given in Table IV. The factor for bursting strength was fairly constant for the four furnishes examined and is approximately equal to the ratio obtained for burst tests on handmade and machine-made paper from chemical pulps. The factors for the other physical properties, while not as constant as those for bursting strength, are still indicative of a definite relationship between the two types of paper.

It is evident from these data that the preparation and testing of handsheets in a strawboard mill would give a rapid means of evaluating, beforehand, the properties of the commercial board or paper made from a given furnish. It would only be necessary to run a few tests during normal operation to establish the strength ratios of handmade to machine-made paper for the furnish and the particular cylinder or fourdrinier machine involved.

Summary

1. A proposed laboratory method for evaluating straw and other agricultural residue pulps is outlined.

2. This procedure, involving disintegrating, washing, and testing of the cooked straw, gave reproducibly good results with both laboratory- and commercially-prepared straw pulps.

3. The relationship between the physical properties of handmade and machine-made strawboard was established.

4. This method should be of value to strawboard mills in increasing and maintaining the uniformity of their products and in developing new products from straw and other agricultural residue pulps.

TABLE IV.—RATIOS OF PHYSICAL PROPERTIES OF HANDMADE AND MACHINE-MADE STRAWBOARD

Factor: Laboratory Handsheets / Machine-made Sheets

Mill No.	Caliper	Density [1]	Tear Resistance	Tensile Strength	Bursting Strength
1 [2]	1.31	0.68(1.47)	1.08	0.63	0.68
2	1.45	0.66(1.51)	1.21	1.44	1.53
3	1.24	0.79(1.27)	1.35	1.36	1.37
4	1.13	0.76(1.31)	1.18	1.13	1.54
5	1.35	0.63(1.59)	1.08	1.15	1.53
Average [3]	1.29	0.71(1.41)	1.21	1.27	1.49

[1] The reciprocal of the density factor is given in parentheses.
[2] Sample from cylinder vat received in air-dry condition.
[3] The values from No. 1 were not included in calculating the averages.

New TAPPI Members

Harold W. Bodey, chief buyer, E. S. & A Robinson Ltd., 1 Redcliffe street, Bristol 1, England. Attended Clifton College.

Kenneth W. Coons, head of Department of Chemical Engineering, University of Alabama, University, Ala., a 1930 graduate of Columbia University.

Peter Faichney, chief chemist, North of Ireland Paper Mill Company Ltd., Ballyclare, Northern Ireland, a 1923 graduate of Heriot-Watt College, Edinburgh, Scotland.

William E. Grosset, director, Kent Kraft Mills Ltd. and Paper Sacks, Ltd., both at Northfleet, Kent, England.

Paul E. McCoy, research engineer, American Bitumuls Company, 200 Bush street, San Francisco, Cal., a 1932 graduate of Johns Hopkins University.

Winslow B. Mills, superintendent, Taggart Corporation, Herring, N. Y.

Donald L. Reed, alcohol plant superintendent, Puget Sound Pulp and Timber Company, Bellingham, Wash., a 1927 graduate of the University of Washington.

James A. Smith, sales engineer, Nash Engineering Company, 1423 Hyde Park Boulevard, Chicago, Ill., a 1939 graduate of Massachusetts Institute of Technology.

Clayton B. Willis, in charge of laboratory, Container Corporation of America, Fort Worth, Texas, a 1940 graduate of Sam Houston State Teachers College.

Whitlock Heat Transfer Equipment

The new Whitlock Bulletin No. 645 describes and illustrates Whitlock Heat Transfer Equipment, including shell and tube and coil types made by the Whitlock Manufacturing Company, 48 South street, Elmwood, Hartford 1, Conn. The bulletin illustrates design considerations pertinent to the chemical processing field, such as tube bundle and closure contruction, and specifies individual product data including fuel oil heaters, water heaters, and power plant equipment. A copy may be obtained by writing the Whitlock Manufacturing Company, Hartford 1, Conn.

The Use of Various Papers In Paper Laminates*

By Robert W. Barber[1]

Abstract

Cellulose fibers are used in many forms in the manufacture of plastics; the end use being the factor determining the qualities required. They are incorporated to reinforce and strengthen the plastic material which is laminated and usually stronger than the comparable molded product.

A summary is given of the materials used in the manufacture of laminates. The construction and the characteristics of the fiber of the paper used as the base are most important to the strength properties of the plastic. Formation, furnish, tensile strength, density, and absorbency are of particular interest.

The uses of paper laminates are many and varied and can be expected to increase. Typical uses considered herein pertain to their application in refrigerators, aircraft flooring, and die construction.

This paper is concerned primarily with paper base phenolic laminates, but before proceeding into a discussion of the various papers used in laminating, it is in order to bring up the question of why paper is used and what particular requirements it fulfills in the general group of cellulose reinforcing agents.

Cellulose fibers as fillers reduce the cost of the usually higher priced resins, but primarily, they are used to reinforce and strengthen the plastic material. They are used in many forms. In molding compounds, such fillers range from the finely ground and short fibered wood flour through cotton flocks of various lengths to macerated fabrics and chopped cords. These molding materials are, as a class, comparatively low in strength, but are somewhat more uniform with regard to strength in all directions when compared to laminates.

By its very nature, a laminated plastic is stronger than the comparable molded product. In a laminate, the reinforcing agent is built up in a predetermined manner and its form is not essentially changed by the molding operation, whereas in a molded material, the reinforcing agent has no particular structure of its own and must flow with the resin. What little order of structure is obtained is a function of the peculiarities of the piece being molded. The reinforcing agent in a laminate can be controlled so as to conform to a definite design, and it, therefore, can truly be considered as an engineered structure. It is, however, inherently weaker in the interlaminar plane, and, is therefore, usually restricted to sheets or shapes where the thickness is far exceeded by the other dimensions.

Materials Used for Laminates

The cellulose materials used in laminating are paper, cotton fabric, and cotton mat. Pulp forms are not included as a separate group as they are considered to be quite similar to a single lamination of heavy paper. Paper is low in cost and its characteristics can be varied over a wide range, including materials which have excellent strength properties. The mat materials, because of their difficulty in handling, do not come in to general use at this time. The woven fabrics are used extensively because of their particular characteristic of toughness, and they have a definite use in the field along with paper laminates. For this reason, there is, for comparative purposes, one fabric base laminate included in the table of physical properties.

While the phenolic type is the most widely used resin in paper laminates, a word or two relative to other types of resins should be included at this point. The thermoplastic resins, as a class, are all characterized by relatively high molecular weight, and when dissolved, the solutions are high in viscosity. This results in difficulty in handling and in obtaining paper fiber saturation, and for this reason, thermoplastic resins do not find general use in laminating processes.

The contact types of thermosetting resins are of low molecular weight and low viscosity in their liquid state. These resins show considerable promise for use in paper laminates. However, they are still quite new and in the development stage and knowledge of their use as laminating resins with paper is not very extensive.

The urea and melamine types of resin are extensively used in laminating. They are, however, inherently brittle and are not easily plasticized. Their use in the past has been for the most part restricted to decorative applications where their water whiteness and stability of color is of primary importance. The use of melamine resins in the electrical field is rapidly expanding, mainly because of their excellent arc resistance.

Phenolic resins are particularly well suited for use with paper in laminating. They can be controlled over a wide range of properties and have good strength characteristics. They readily penetrate the structure of the paper and make hard, strong and well-formed laminates. To simplify the comparison, the data given herein are all based on phenolic laminates.

A paper laminate is a composite structure consisting of a phenolic resin bonding agent and the fibrous base material and combines, in a practical way, the properties of both component parts in much the same way that steel and concrete in reinforced concrete structures support each other. The phenolic resin, which has a low tensile strength, furnishes compressive strength and stiffness, occupies the free space between the fibers of the base, and bonds the fibers and the layers together. The fibers of the base material contribute a major part of the composite tensile strength.

Effects of Paper Qualities

In order to obtain the maximum theoretical tensile strength of the cellulose fiber, it would be obviously

* Presented by title at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] Chief Engineer, Panelyte Div., St. Regis Paper Co., Trenton 4, N. J.

TABLE I.—EFFECT OF PAPER CONSTRUCTION ON STRENGTH OF LAMINATE

Paper Characteristics Furnish	Sulphate	Sulphate
Basis weight (24×36—480), lb.	34	93
Thickness, mils.	3.5	11.0
Density, lb./mil.	9.7	8.4
Oil penetration, sec.	3.5	6.0
Gurley Densometer, sec./100 cc.	7.5	7.5
Type Resin	Phenolic	Phenolic
Physical Properties		
Tensile strength, p.s.i.	23,500	21,000
Modulus of elasticity	2.2×10^6	2×10^6
Flexural strength, p.s.i.	30,000	28,500

necessary that all of these fibers lay in the direction of the loading and be free of curl or twist, so that all fibers are uniformly loaded. Obviously, this condition cannot be even approximated in a sheet of paper. However, an approach is made toward this end by making the sheet quite thin and as directional as possible. By following this procedure, the fibers tend to lie flatter and a greater proportion of them lie in a parallel plane. If a balanced strength in the two directions is desired, this can be attained by laying alternate sheets 90° to each other.

The effect of the construction of the paper on the strength of the laminate can be seen by an examination of Table I, which makes direct comparison between two papers, each having the same furnish. Number 1 is made of a thin directional paper as against No. 2 made of a thicker sheet, which is somewhat less directional. The two factors which cause this difference in strength cannot be isolated—that is, the directional properties of the sheet on one hand and the thickness of the paper on the other. However, there is good reason to believe that both are affecting the tensile properties.

Groundwood and other nonchemically treated pulps are too weak and are generally unsatisfactory as reinforcing agents in laminates.

The types of papers in common use are: sulphite (particularly Mitscherlich sulphite), sulphate kraft, alpha, and rag stocks. On examining the tensile strength figures listed in Table II, it will be noted that these various types of papers decrease in strength in the order named, although there is little difference between the rag and the alpha stocks. This is by no means entirely a matter of the type of pulp used, but is largely influenced by the mechanical structure of the paper itself. The papers used in this study were not all designed to obtain the maximum strength for the particular type of pulp in question. It is, therefore, not possible to isolate the effect of the structure of the paper from that of the particular pulp used in its manufacture. Nevertheless, fairly definite conclusions can be drawn.

The tensile modulus bears an almost direct relationship to the tensile strength. The compressive strength also is higher with the less refined pulps—the thin Mitscherlich sheet being the highest. In compression, however, the differences are much smaller, which is to be expected as the compressive strength is, to a large extent, supplied by the resin. The flexural strength follows the same trend as the tensile and compressive strengths, and as would also be expected, the magnitude of the spread of variation is intermediate between the flexural and compressive strength figures.

It is of considerable interest to note the variations exhibited in the impact strength figures, particularly the very pronounced differences between the flat and edge values. Paper laminates as a group are somewhat low in impact strength when their position in the general group of reinforced plastics are considered. It is quite evident that the ability to absorb the energy of an impact blow is greater in a structure that is not too homogeneous, and is further increased by a composition consisting of plies which are predominantly fibrous and which are bound together with resin. This hypothesis would explain the large differences between the flat and edge impact strengths and would also account for the marked differences between the values for paper and cloth.

The bonding strength is appreciably higher when thicker paper is used, and is also markedly increased when the softer, more absorbent, papers are used. This difference is partly a function of the greater amount of fiber interlock which is obtained when laminating the softer papers, but also is undoubtedly affected by the lay of the fibers themselves. The thicker sheets have a greater proportion of fibers which do not lie in the plane of the laminae and therefore contribute to some degree to the tensile strength in the direction of the thickness of the sheet. Aside from these considerations, the thickness of the sheet might be expected to have some bearing in itself, although experiments made using papers of 20 to 30 mils thickness (test figures not shown herein) have shown no great increase in bonding strength over 10 mil paper.

The shear strength is apparently not greatly affected by either the type of pulp used or the physical structure of the paper.

The water absorption is lower when using a more highly refined furnish, and is also somewhat better when using a softer sheet. Obtaining good water resistance is purely a matter of protecting and sealing

TABLE II.—COMPARISON OF LAMINATES

Paper Characteristics	Mitscherlich Sulphite	Sulphate Kraft	Alpha	Rag	Fabric
Basis weight (24×36—480), 5% H_2O, lb.	30	93	79	48.5	
Thickness, mils.	3.0	11.0	10.0	7.0	8 oz.
Density, lb./mil.	10.0	8.4	7.9	6.9	cotton
Oil penetration, sec.	2	6.0	3.0	1.8	duck
Gurley Densometer, sec./100 cc.	15	7.5	4.0	7.5	
Type Resin	Phenolic	Phenolic	Phenolic	Phenolic	Phenolic
Resin Content	40%	40%	40%	40%	40%
Physical Properties					
Tensile strength, p.s.i.	30,000	21,000	18,000	16,500	11,000
Modulus of elasticity	2.4×10^6	2.0×10^6	1.6×10^6	1.25×10^6	0.9×10^6
Compression flat, p.s.i.	47,000	45,000	40,000	42,000	40,000
Compression edge, p.s.i.	23,000	23,000	20,000	20,000	20,000
Flexural strength flat, p.s.i.	35,500	28,500	26,000	22,500	19,500
Modulus of elasticity	1.35×10^6	1.5×10^6	1.25×10^6	1.25×10^6	$.65\times10^6$
Flexural strength edge, p.s.i.	25,000	27,000	24,500	21,000	19,000
Izod impact, ft. lb./in. notch					
Flat	4.50	1.95	1.50	1.65	4.5
Edge	.78	.55	.50	.57	3.0
Bonding strength, lb.	850	975	1,250	1,175	1,850
Shear, p.s.i.					
Flat	14,000	16,000	14,500	13,500	12,000
Edge	8,000	10,000	8,000	7,500	9,500
End	8,500	9,000	8,000	7,500	9,000
Water absorption, %	2.6	2.2	1.5	1.4	2.5
Density	1.41	1.40	1.41	1.42	1.35

off the cellulose fibers, as the phenolic resin is in itself practically unaffected by water. It follows that the more highly refined the fibers are and the more open the sheet, the more accessible are the fibers to the protecting resin. This fact largely accounts for the large use of highly refined pulps in electrical applications, as the maintenance of electrical qualities under varying conditions of humidity is of equal, if not greater importance, than the initial electrical properties themselves.

In comparing the properties of the fabric base with those of the paper base laminates, it will be noted that the former excels only in impact and bonding strength. The other strength characteristics are lower for fabric base even when compared to the paper materials which are not considered as high strength laminates. Hence, the popular conceptions of "where high strength is required, use fabric base" should be amended to "where toughness and bonding strength are required, use fabric base."

It should be pointed out that certain limitations do exist which must be considered in applying paper laminates. The tendency to creep or cold flow at high loadings, although considerably less with laminates than with other plastics, appears at lower stresses for paper laminates than for some metals. Also, the operating conditions, particularly temperature and humidity, to which the paper laminate will be exposed, must be considered, since high temperatures will result in a slight deterioration, and high humidities, despite the excellent moisture resistance, do result in slight dimensional changes.

Uses for Paper Laminates

The uses to which paper laminates are put are many and varied. Radio coils are wound on paper laminates. Terminal strips, switch mountings, socket bases, insulating brackets, and many other radio parts are made of paper base laminates. In most refrigerators, the breaker strips in the door frame are of paper laminates, as is the whole inside of the door itself, the insulating parts of the switches, and several parts in the compressor. Automobile ignition systems are to a large degree insulated with paper laminates. Rayon yarn is wound and dried on spools made of laminated paper tubing. Aluminum aircraft parts are formed over jigs made of paper laminates. The armed forces use paper laminates in many ways: In Ordnance, Chemical Warfare, Quartermaster supplies, radio, radar, and aircraft. There is scarcely an industry or activity that does not today use paper laminates in some form or other, and the scope of the applications is steadily expanding.

A few of the typical applications will be examined more closely. An excellent illustration is a refrigerator breaker strip. It is necessary to provide an insulating barrier between the warm outside shell and the cold inside of the refrigerator in order to prevent sweating and to maintain thermal efficiency. Thus, the primary function of the breaker strip is that of heat insulation. The breaker strip may or may not serve as a structural part of the assembly. However, in any case, it must be sufficiently rugged to stand the normal abuse which occurs, particularly on the bottom sill. It must resist moisture and be dimensionally stable when subjected to varying humidity conditions. Lastly, it must present a good appearance and have good wearing qualities so that the finish does not deteriorate with use. Paper base laminates answer the above requirements admirably. They have the required heat insulating properties combined with the needed structural strength. They are resistant to moisture, dimensionally stable, and have a hard, long-wearing surface.

Aircraft flooring may be considered as an excellent example of the use of the material as a structural application. Strength, light weight, and durability are the prime considerations here. The loading on a floor is primarily flexural or beam loading, and in such a structure, the highest stresses are at the outer surfaces. This situation can best be met by the use of a sandwich material or similar structure. In this case, the selection is a sheet consisting of a plywood core and paper laminate surfaces. As the load is borne largely by the surface material, the strongest type of material is chosen. This will be made up by using a thin directional paper made from a not too highly refined pulp, probably a sulphate or Mitscherlich sheet. Moisture absorption and dimensional stability are of not too great importance here, as even a poor grade of paper laminate is better in this respect than the plywood core material; therefore such a sheet will be satisfactory in this respect. Finally, it must be considered that relatively low molding pressures must be used so that the plywood is not crushed in the pressing operation. Therefore, a relatively hard paper is used so that the degree of compression required is relatively low and can be accomplished without damage to the plywood core. The result is a composite material which can truly be said to be engineered to the application.

As a third example, a forming block used in the manufacture of aluminum parts for aircraft will be discussed. A large number of aluminum aircraft parts are manufactured by what is referred to as the hydropress process. In this operation, the forming block is a strong solid piece of material which is machined to the contour of one side of the aluminum piece to be formed. This forming block can be considered as one-half of the forming die, and is usually the male or plunger half. The forming block is placed on the bed of a high-tonnage hydraulic press and the aluminum to be formed is placed over it. The bottom section of the head of the press is composed of a very thick piece of resilient rubber. Extremely high pressures are used, and the resilient rubber forms the aluminum sheet to the exact contour of the forming block. The requirements for the forming block itself are that it be hard, strong, good-wearing, and easy to machine. While not normally exposed to extreme variations of humidity, it should be dimensionally stable under the conditions of operation. A low coefficient of friction between the forming block and the aluminum sheet is desirable. Paper base laminates are well suited to this application. They have sufficient strength for all but the most difficult of operations (in these cases, metals are used), and are durable, long-wearing, dimensionally stable, and, last but not least, their ease in machining results in low cost parts.

The use of paper laminates is by no means new, as they are among the older of the various plastics. They have for some time past been standardized throughout the industry, particularly insofar as electrical applications are concerned. Standards are published by N.E.M.A. and A.S.T.M. and are covered as well by various government specifications.

The end, however, is by no means reached, neither as to development of materials and processes, or as to expansion of applications, as both are progressing rapidly. Resin research is active and manufacturers are constantly bringing forth new types of resins as

well as improvements of the older types. At the same time, much work is being done in the development of new techniques, particularly along the lines of the manufacture of special shapes or molded laminated forms. It should be the function of the papermaker not only to work towards the development of papers for the improvement of the quality of laminates, but also to work with the laminator in the development of the papers suitable to the particular molding problem involved.

In summing up, it can be stated that there are many advantages inherent in paper base laminates, i.e., low cost, ease of fabrication by standard machining techniques, high strength in relation to weight, insulating properties, both thermal and electrical, and durability, which makes it ideally suited for applications in many fields.

Bleaching Process and Equipment*

By E. Viggo Ullmann[1]

Abstract

The Kamyr bleaching system is described. The construction of the more important units involved is discussed. They are characterized by simplicity of design and operation. The system is flexible and the stock can be processed dependent on specific requirements.

The Kamyr bleaching system was first developed at one of Scandinavia's greatest sulphite mills to bleach stock to a high grade alpha pulp to be used for rayon. To make a satisfactory rayon pulp from high grade sulphite pulp is a comparatively simple matter, and the main problems are with the machinery, equipment, and controls in that they are reliable and sturdy.

Bleaching System

The system for sulphite rayon pulp consists simply of three to four towers, arranged in series, in which is carried out: chlorination, neutralization, washing (or diffusion), and in certain cases acid treatment. Between each stage the stock is thoroughly washed on a filter usually of the pressure type where no water leg or vacuum pump is required.

The bottom of a tower is shown in Fig. 1, and the design of this bottom part is most important in the planning of a modern bleach plant. It can be seen how the circulating pump is placed so as to receive all the pulp in the bottom of the tower and to bring it into a rotating movement around the guide vane dividing the bottom part in two. As new stock enters into the tower near the suction part of the impeller, the stock in the tower is forced upwards and eventually overflows over the top. The capacity of the pump is designed in relation to the incoming stock so that it will handle about six to eight times the raw stock which obviously makes every fiber pass through the pump six to eight times before it eventually starts on its upwards journey through the tower. The chemicals (chlorine, NaOH, or acid) are added just prior to the pulp's entrance into the pump, and a thoroughly complete mixing thus is ensured.

Naturally the number of stages, as well as the sequence in such a system may be varied in many ways to conform to the special desires of the individual plant. The design of the tower will always remain the most important detail as an intimate mixing and even distribution of chemicals and fibers will always be most imperative.

The final stage of hypochlorite treatment may take place in batch bleachers in the ordinary way, or if a continuous system is desired, another tower is added to the ones mentioned above.

The consistency of the stock in the various stages naturally may be varied to suit the local requirements, but most often the consistencies and temperatures, as well as calculated reaction time, are as follows: (1) Chlorination, 3%, 60°F., 30 minutes; (2) neutralization, 6%, 200°F., 250 minutes; (3) diffusion 3%, 60 to 80°F., 25 minutes; and (4) hypochlorite 6 to 8%, 95°F., 3 to 6 hours.

Obviously individual factories will have individual problems and desires of their own, and it is therefore important that a bleaching system be designed so as to give the widest possible flexibility as conditions may change. Once built, a plant cannot very well be redesigned overnight. The system being discussed offers this flexibility to a great extent and is extremely simple as is the machinery used. The circulation pump used in the bottom of the tower offers a minimum of surface in direct contact with the stock which decreases the friction to a minimum and enables the manufacturer to use expensive material in the rotating parts.

* Presented by title at the Annual Meeting of the Technical Association of the Pulp & Paper Industry, Hotel Commodore, New York, N. Y., Feb. 19-22, 1945.

[1] Member TAPPI; Mech. Eng., New York, N. Y.

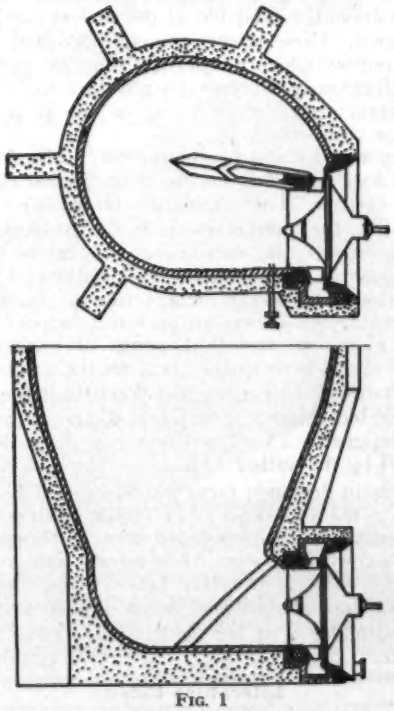


FIG. 1
Details of Tower Bottom

Filters

Between each stage of the bleaching system the stock is washed on a filter, normally of the pressure type. It may be equipped with a shredder to break the pulpweb going off the pressure roll. The pressure between the perforated, wireclad drum and the rubberlined pressure roll is maintained by means of counterweights whereby the load and consequently the dryness can be controlled. The inlet density of the stock may vary on these filters between 0.5 to 3% (moisture-free), and the ultimate dryness is between 12 and 14% depending upon initial consistency, kind of pulp, etc. In the bottom of the vat is arranged a special washwater pipe which adds to the washing effect of the filter, and though the eventual dryness is less than on a suction filter, about 25% more water is used on a pressure filter than on a suction filter, there is a better wash of the fibers. The water is added at the right moment, that is when the web that has just started to be formed on the drum has reached a dryness of 4 to 5%, and dilutes it again to 1 to 2%. Both theoretically and in practice, such double washing is the most efficient.

The capacity of the pressure filter naturally is dependent on the type of fiber, and other local conditions, but roughly one may calculate with about 1 ton per inch working width, an ultimate dryness of 14% or more.

For higher capacities a special filter has been developed on the same principle, shown in Fig. 2 as the "duplex" filter. The pulp inlet is at A and the two filter drums are pressed together in the same way as the pressure roll and the drum on the ordinary "simplex" filter. Webs are formed on both drums; the two webs are pressed together at B whereafter the stock follows the largest drum in its rotation towards the picking-up roll C whence it is removed by a scraper. The wash-water pipe is shown as D and the washwater is distributed along the whole width of the filter in the same way as on the simplex type. The white water leaves on both ends, and no pumps are necessary for the removal.

Still another type of filter is shown as Fig. 3, the so-called "rotor" filter. This filter in reality is a combination of a pressure and suction filter, the inner drum being equipped with suction chambers, and the outer drum being pressed against the inner drum to obtain the squeezing action after the washing. The stock enters and leaves the filter along the same centerline parallel to the axis of the filter drums, and the outer drum is pressed against the inner by means of rollers, hydraulically operated.

Stock Flow

As previously mentioned, the stock overflows at the top of the tower and by transport pump is brought to the following stage. The latest design is to build the stock pump into the overflow; in this way there will be no suction pipe on the pump which minimizes the risk of clogging to practically nil. The stock flows directly into the impeller of the pump with otherwise is designed as a standard stock pump, for pulp up to 5 to 6% consistency.

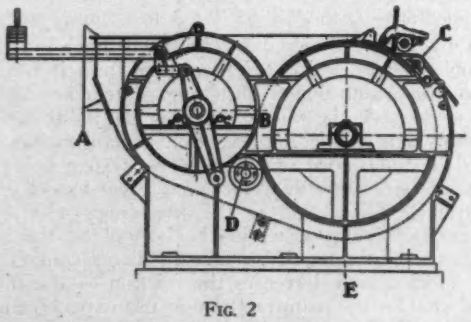


Fig. 2
Duplex Filter

Fig. 3
Rotor Filter

Modern bleaching plants demand a higher consistency than was the case only a few years ago, and in such cases a tower is recommended in which the stock enters at the top and slowly sinks down without any circulation. Near the bottom, the stock is diluted to a consistency that can be handled by the circulation pump which is arranged in much the same way as in an upwards working tower, and eventually is carried away by a transport pump of the built-in type. The dilution is made with water or with chemicals depending upon what treatment the stock is subjected to in the following stage.

Still another high-density system has been developed in Sweden during the last years, but there are no drawings available of the towers used in that connection. These towers are equipped with a screw in the bottom which presses the stock upwards while it simultaneously concentrates the stock to 15 to 16%. The liquor thus squeezed out of the pulp is used again or recovered.

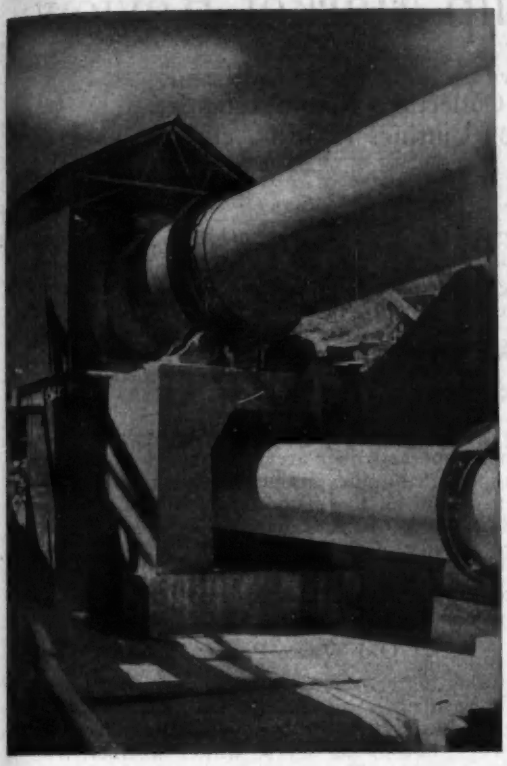
Many experts still prefer the batch bleaching, and special batch bleacher can be used instead of towers where desired. The circulation pump used is very much like the pumps used in the aforementioned towers. In fact, the same spare parts can be used for either pump. The stock is usually dumped through the bottom of these bleachers into a storage chest underneath, but in certain cases it is preferred to install a built-in transport pump like the one described above to keep the chest on the ground floor.

The newest in bleaching development is the sodium peroxide bleaching of groundwood, and a system has been designed. This has previously been described in detail by the author *(1)*.

The main demands from a modern bleaching plant can be stated as follows: (1) Quick mixing of stock and chemicals, (2) even distribution of the chemicals through the whole stock, (3) ample time for reaction, (4) thorough washing between the stages, and (5) a certain flexibility of the design, so as to allow minor alterations in the density, the time, temperature, etc.

Literature Cited

1. Ullmann, E. V., *Paper Trade J.* 118, No. 25: 35-38 (June 22, 1944).



PAPER MILL OPERATORS!

Are you interested in—

CONTROLLED PARTICLE SIZE AND SETTLING RATES FOR LIME, BY METHOD OF REBURNING AND SLAKING?

Write us making appointment to have a talk with our engineer.

TRAYLOR ENGINEERING & MANUFACTURING CO.

ALLENTOWN, PENNA., U. S. A.

RHINO
NON-RETURNABLE

Non-Returnable Cores

An extremely tough and practical core of tested strength for one-time use, and priced accordingly. We have been able to maintain prewar quality standards and adequate production on this core with which to serve a wide range of uses where practical to use this type.

RETURNABLE CORES

Grade A	Heavy Duty Metal Ends—Fibre Stock Construction · strong, rugged, hard finish.
Grade B	"All Purpose Metal" Ends—Heavy Laminated Paper Construction.

sonoco
TRIPLE CARRIERS

SONOCO MAKES *EVERYTHING* IN *PAPER CARRIERS*

SONOCO PRODUCTS COMPANY

BRANTFORD ONT. · HARTSVILLE S. C. · MYSTIC CONN.

SHIPPING POINTS: LOWELL, MASS. HARTSVILLE, S. C.

DEPENDABLE SOURCE OF SUPPLY

New York Paper and Pulp Market Review

Dawn of V-E Day Expected To Relieve Acutely Short Pulp and Paper Supply Situations—Waste Paper Collections Rose Substantially In March — Mill Buying of Cotton Cuttings Is Still Active.

Office of the PAPER TRADE JOURNAL,
Wednesday, May 9, 1945.

With the proclaiming of Victory Day in Europe, all divisions in the paper industry are speculating on what remedial effect the end of hostilities will have on the low civilian paper supply. Opinion heard in some quarters is to the effect that the heavy demands of military, Lend-Lease, etc. for paper makes it unlikely that any material improvement in the civilian supply will occur in the third quarter. In other quarters a definitely more optimistic view is expressed, that V-E Day victory marks the beginning of easement of restrictions which have limited the consumption of paper by normal large-scale consumers. In the opinion of one prominent paper man, supplies of paper for packaging and for use in containers will show a definite improvement in the third 1945 quarter. This outlook is based on the expectation of decreased war demands and the importation of Swedish pulp. Other factors cited are the correction of distribution methods, with waste paper going only to waste paper users and wood pulp to consumers of pulp. The opinion was also expressed that paper available later this year will more closely approach prewar quality and standards.

The index of general business activity for the week ended April 28 rose to 146.4, from 143.9 for the previous week, compared with 145.5 for the corresponding week in 1944. The index of paperboard production was 157.3, compared with 159.5 for the previous week, and with 154.5 for the corresponding week in 1944.

Paper production for the week ended April 28 was estimated at 87.0%, compared with 89.8% for 1944, with 85.8% for 1943, with 99.8% for 1942, and with 98.7% for the corresponding week in 1941.

Paper production for the week ended April 28 was 93.0%, compared with 98.0% for 1944, with 89.0% for 1943, with 90.0% for 1942, and with 83.0% for the corresponding week in 1941.

Pulpwood

Pulpwood receipts of domestic wood for March totaled 1,486,200 cords, which is 2.50% below 1944. Receipts for the first 1945 quarter totaled 4,132,200 cords, which is 6% below 1944. Imports for the quarter were 324,800 cords and 23% below last year, while March 1945 imports of 111,500, were the lowest in the last five years.

Wood Pulp

The decline in wood pulp inventories of 17.8% in the first two months of 1945, compared with 1944, indicates total inventories were down to 319,000 tons. The Department of Commerce reports that the rail freight tie-up in January and early February, particularly in the Northeast, had a further effect on the deteriorating supply. In the first two months of 1945, production was 4% above 1944, while consumption rose 2%.

Rags

Demand for papermaking grades of new cuttings and rags is reported active at this date. Mill buying is in good volume and white shirt cuttings and unbleached muslins are relatively scarce.

Old rags, particularly in the roofing grades, are in active demand. Old whites and blues are active this week. All prices are quite strong at ceiling levels.

Old Rope and Bagging

Manila rope and fiber are in strong demand with no prospect that mills producing strong papers are likely to obtain all the material required. Prices are firm at ceilings on hard fibers.

More activity in the scrap bagging market is reported in some quarters this week. Other reports indicate buying is on a limited scale and prices are soft and nominal.

Old Waste Paper

Somewhat more waste paper is being salvaged now that the weather is more favorable for collections. Collections in the first two months of 1945 were 11% below 1944, due to the severe winter weather. The 8,000,000 ton waste paper salvage goal for 1945, is the same as for 1944 and calls for weekly collections of about 154,000 tons. This goal has not been reached as yet, but March collections indicate collections may be about 95% of the goal.

All paper stock prices are strong at ceiling levels.

Twine

No important change in the twine and cordage market has been reported this week. Prices are relatively firm, demand active and no change has been reported in quotations on any grade of hard or soft fiber twine.

T. B. McCabe Assumes New Duties

Active direction of the disposal of Army-Navy overseas surplus property has been assumed by Thomas Bayard McCabe, as Commissioner of the Office of Army-Navy Liquidation, a joint military and civilian disposal organization, the Office announced recently.

Mr. McCabe is on leave from duty as chairman of the Board of the Federal Reserve Bank of Philadelphia and president of the Scott Paper Company. He already has served the government as executive assistant to E. R. Stettinius, Jr., in the Advisory Commission for the Council of National Defense; Deputy Director, Division of Priority, Office of Production Management; Deputy Lend-Lease Administrator; member of U. S. Committee for Inter-American Development, and Chairman of Business Advisory Council for Department of Commerce.

The Office of the Army-Navy Liquidation Commissioner was recently established by order of Secretary of War Stimson and Secretary of Navy Forrestal.

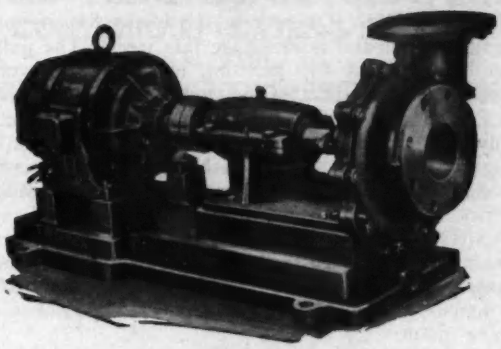
Producers of

SULPHUR

Large stocks carried at all times, permitting prompt shipments . . . Uniformly high purity of 99½% or better . . . Free of arsenic, selenium and tellurium.

TEXAS GULF SULPHUR CO.
75 E. 45th Street New York 17, N.Y.
Mine: Newgulf, Texas

WHAT . . CAN A PUMP DO . . FOR YOU?



What do you look for in a pump? You have a job to do, and you're in the market for a pump *tailored* to the job. Where would you go for that kind of pump?

Representative users in diversified industries recommend FREDERICK pumps . . . *guaranteed* to do the work for which they are sold.

No stock pump—not a "do-it-all"—*your* FREDERICK pump is built from a basic design with *your* requirements in mind, to perform the specific task you have for it to do in your own plant.

We have been building fine pumps for over a quarter of a century. Sturdily constructed, low in cost—high in pumping efficiency, a FREDERICK pump will give trouble free service for a long period.

Our engineering consultation is available without obligation . . . let us tell you more about FREDERICK pumps—designed to meet the operating conditions of *your* industry.

THE Frederick IRON & STEEL CO.
Frederick, Maryland

OVER 25 YEARS EXPERIENCE IN THE MAKING OF FINE PUMPS

THE PROBLEM OF THE DROPLET
You who have never designed a felt probably don't realize the difficulties a simple drop of water can present. Surface tension, temperature, felt porosity, machine speed, pressure . . . all of these and more make the problem of water removal a real scientific puzzler.
Felt manufacture, therefore, is an art. That's why we point out the advantage of having a felt expert suggest felt clothing designed for your particular machine conditions. THE ORR FELT & BLANKET CO., Piqua, Ohio.
ORR FELTS

GOOD ROLLS ARE EASIER TO SELL
Good paper deserves to be put up in good rolls, poor paper demands it. Good paper will almost sell itself but in poor rolls it needs considerable selling. Use CAMACHINES to wind good rolls faster. Write for interesting literature.
CAMERON MACHINE COMPANY - 61 POPLAR ST. BROOKLYN 2, N. Y.
Midwest Office: 111 W. Monroe Street, Chicago 3, Ill.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, May 9, 1945.

BLANC FIXE—Quotations on blanc fixe reported unchanged. Demand is moderate this week. The pulp is currently quoted at $40 per ton, in barrels, at works; the powder is quoted at $60 per ton, f.o.b. works.

BLEACHING POWDER—Current demand is active. Supply situation is reported good at this date. Quotations continue unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots, at works.

CASEIN—OPA maximum prices on processed acid-precipitated casein are as follows: 10,000 pounds or more, 24 cents per pound; 2,000 pounds, 24¼ cents per pound; less than 2,000 pounds, 24¾ cents per pound, f.o.b. shipping point.

CAUSTIC SODA—Demand continues very heavy. Production high but below current needs. Export demand unsatisfied. Boxcar shortage still delay shipments. Solid caustic soda is quoted at $2.30 per 100 pounds; flaked and ground is quoted at $2.70 per 100 pounds; all in drums, car lots, at works.

CHINA CLAY — Quotations on china clay are unchanged. Current demand is reported fair. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Demand heavy with essential requirements met. Supply situation still reported tight at this date. Quotations are unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN — No offerings at unchanged OPA ceiling prices: "G" gum rosin at $5.79 per 100 pounds, in barrels, at Savannah; "FF" rosin at $5.75 per 100 pounds in barrels, at New York; seventy per cent gum rosin size at $6.06 per 100 pounds, f.o.b. works.

SALT CAKE — Prices on salt cake are reported unchanged for the current week. Consumption is reported moderate at this date. Domestic salt cake is quoted at $15 per ton, in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots, f.o.b. shipping point.

SODA ASH—Heavy demand continues for all-over requirements and supply is short. Bulk lot shipments improved. Bagged lots slow. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Current corn receipts in good volume this week; shipments a little improved. Prices reported less firm at this date. Starch prices continue unchanged. The pearl grade is quoted at $3.72 per 100 pounds; powdered starch at $3.83 per 100 pounds; all prices in bags, car lots, f.o.b. Chicago.

SULPHATE OF ALUMINA — Demand reported good. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.25 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.85 per 100 pounds, in bags, at works.

SULPHUR—Quotations on sulphur continue to conform to prevailing market prices. Demand active. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price at Gulf Ports is $17.50 per long ton.

TALC—Prices on talc continue unchanged. Demand good. Domestic grades are currently quoted at from $16 to $21 per ton at mines; Canadian at $24 per ton. All prices in car lots.

MARKET QUOTATIONS

All market quotations, excepting those otherwise designated as official OPA maximum prices, are based on the manufacturers' price level as of October 1-15, 1941; maximum wholesale prices are based on the merchants' maximum prices for stipulated quantities at a quoted price to all customers of a like class, as shown by the merchant's sales records of goods delivered during March, 1942. A merchant's price list in effect in March 1942, showing quotations of actual shipments, will establish the current maximum prices.

Paper

(Delivered New York)

Standard News, per ton—			
Roll, contract	*$61.00	@	—
Sheets	69.00	@	—
*OPA Maximum Price.			
Kraft—per cwt.—Carload Quantities Zone A, f.o.b. Mill			
Superstandard Wrapping	*$5.25	@	—
No. 1 Wrapping	*5.00	"	—
Standard Wrapping	*4.75	"	—
Standard Bag	*4.375	"	—
*OPA Manufacturers' Prices.			
Tissues—Per Ream—Carlots			
White No. 1	1.12½	"	—
White No. 1 M. G.	1.10	"	—
White No. 1½	1.00	"	—
White No. 2	.90	"	—
Anti-Tarnish M.F.	1.20	"	—
Colored	—	"	—
Kraft	.95	"	—
Manila	.90	"	—
Toilet—1 M. Sheets—Per Case			
Unbleached	4.25	"	—
Bleached	5.70	"	—
Unbl. Toilet, 1 M.	4.16	"	—
Bleached Toilet	5.70	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.20	"	—
Bleached, Jr.	3.20	"	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	11.25	@	—
No. 1 Manila Wrapping, 35 lb.	6.00	"	6.25
No. 2 Manila Wrapping, 35 lb.	5.75	"	6.00
Boards, per ton—			
News	*50.00	@	—
Chip	*50.00	"	—
Sgl. Mla. Ll. Chip	*62.00	"	—
White Pat. Coated	*75.00	"	—
Kraft Liners 50 lb.	*63.00	"	—
Binders Boards	84.00	"	116.00

*OPA Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5.; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers
100% Rag Ext. No. 1	$39.10 @ $46.00		$40.25 @ $47.25
100% Rag	32.20 " 37.75		33.35 " 39.25
85% Rag	.... "		29.90 " 35.00
75% Rag	23.00 " 27.00		24.15 " 28.25
65% Rag	.... "		22.80 " 27.75
50% Rag	18.70 " 22.75		19.90 " 24.25
25% Rag	16.40 " 20.00		17.55 " 21.50

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

	Bonds	Ledgers
No. 1	$10.55 @ $12.75	$11.70 @ $14.25
No. 2	9.65 " 11.75	10.80 " 13.25
No. 3	9.20 " 11.25	10.35 " 12.50
No. 4	8.90 " 10.75	10.05 " 12.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper. Delivered in Zone 1:

No. 1 Glossy Coated	$13.65	@ $15.30
No. 2 Glossy Coated	12.40 "	14.00
No. 3 Glossy Coated	11.60 "	13.20
No. 4 Glossy Coated	11.15 "	12.70
No. 1 Antique (watermarked)	10.25 "	11.70
No. 2 Offset	9.60 "	11.00
A Grade E. F.	9.35 "	10.70
A Grade S. & S. C.	9.60 "	11.00
B Grade E. F.	8.85 "	10.25
B Grade S. C.	9.10 "	10.50
C Grade E. F.	8.55 "	9.75
C Grade S. C.	8.80 "	10.00
D Grade E. F.	8.25 "	9.50
D Grade S. & S. C.	8.50 "	9.75

Ivory & India at $.50 cwt. extra.

Wood Pulp

OPA Maximum Prices and Canadian Manufacturers Prices, Less Freight Not Exceeding OPA Allowances.

Bl. Softwood Sulphite	$86.00
Unbl. Softwood Sulphite	74.00
Bl. Hardwood Sulphite	83.50
Unbl. Hardwood Sulphite	71.50
Bl. Mitscherlich	81.00
Unbl. Mitscherlich .. 72.00 @	82.00
N. Bleached Sulphate	86.00
S. Bleached Sulphate	79.00
N. Semi-Bleached Sulphate	82.00
S. Semi Bleached Sulphate	75.00
N. Unbl. Sulphate	73.00
S. Unbl. Sulphate	63.50
Bl. Soda	76.00
Unbl. Soda	72.00
Groundwood	50.00

Transportation Allowances

Applying to Producers of Wet Wood Pulp.

	Below 50% Air Dry Weight
Northeast	$13.50
Lake Central	13.50
Southern	16.00
West Coast (in area)	10.50
West Coast (out area)	16.50

	50%-80% Air Dry Weight
Northeast	11.50
Lake Central	11.50
Southern	14.00
West Coast (in area)	9.50
West Coast (out area)	15.50

Applying to Producers of Dry Wood Pulp.

	Above 80% Air Dry Weight
Northeast	$8.50
Lake Central	8.50
Southern	11.00
West Coast (in area)	7.50
West Coast (out area)	13.50

Should freight charges actually exceed these allowances, the difference may be added to the maximum prices.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.50	@	7.25*
Silesias No. 1	—	"	5.75*
New Unbleached	6.75	"	7.50*
Blue Overall	—	"	5.50*
Fancy	—	"	3.50*
Washables	—	"	3.00*
Bleached Khaki Cuttings	—	"	4.25*
Unbleached Khaki Cuttings	—	"	3.50*

*OPA Maximum Prices

Price & Pierce Ltd.

WOOD PULP & PAPER AGENTS

for domestic and export

60 East 42nd Street, New York 17, N.Y.

THE HERMANN CLAFLIN
CONTINUOUS BEATER & REFINER
FOR
ECONOMICAL STOCK PREPARATION

—:—

Numerous installations have proved its ability to improve quality and with a substantial saving in power.

—:—

Adaptable for refining knots and screenings. Continuous and closed systems.

—:—

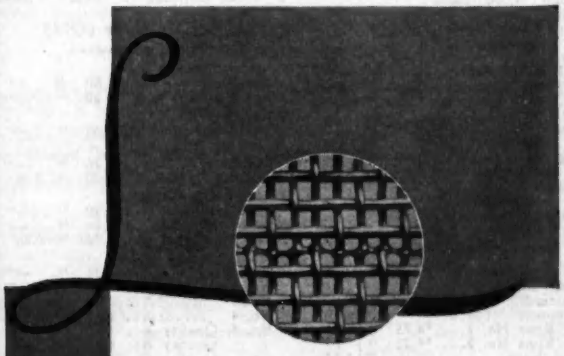
The Hermann Claflin is built in two sizes at the present time. Large capacity No. 3 ready in near future.

—:—

Operated at Conventional Jordan R.P.M.

—:—

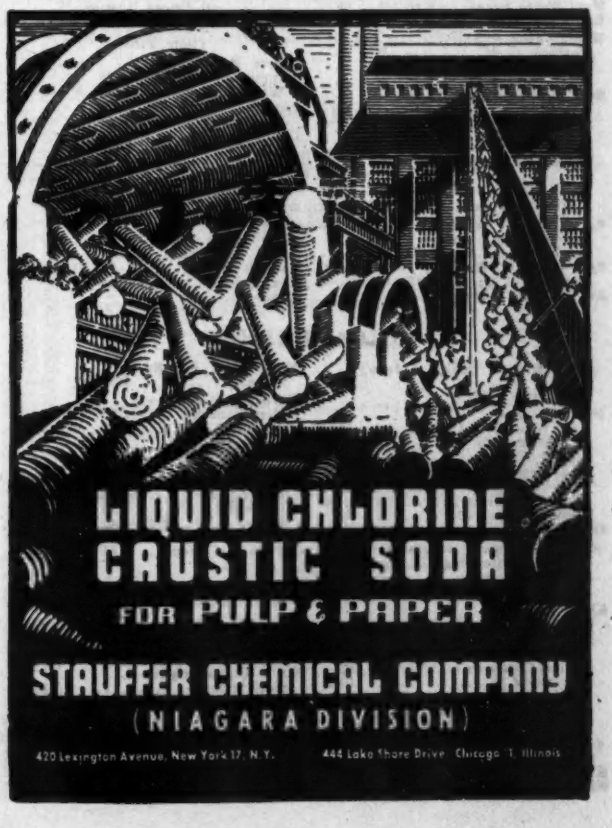
THE HERMANN MANUFACTURING CO.
Also M/g's. Sheet Making-Pulp Testing Apparatus
LANCASTER, OHIO



QUALITY
FOURDRINIER
WIRES
for the Paper Industry
Since 1903

THE LINDSAY WIRE WEAVING COMPANY
14001-14299 ASPINWALL AVE., CLEVELAND 10, OHIO

Lindsay WIRES
FOR PAPER MILLS



LIQUID CHLORINE
CAUSTIC SODA
FOR PULP & PAPER

STAUFFER CHEMICAL COMPANY
(NIAGARA DIVISION)
420 Lexington Avenue, New York 17, N.Y. 444 Lake Shore Drive Chicago 1, Illinois

Old Rags

White, No. 1—			
Repacked	*2.80	@	—
Miscellaneous	*2.20	@	—
White, No. 2—			
Repacked	*2.90	"	—
Miscellaneous	*2.65	"	—
Third and Blues—			
Repacked	*2.20	"	—
Miscellaneous	*1.80	"	—
Roofing Rags—			
No. 1	*1.55	@	—
No. 2	*1.45	@	—
No. 3 (bagging)	*1.35	"	—
No. 4	*1.35	"	—
No. 5A	*1.35	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

All Prices nominal

New Rags			
New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxfords	4.00	"	4.50
New Light Prints	3.00	"	3.25
Old Rags			
No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—
No. 4 White Linens	2.25	"	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

BAGGING

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	4.25	@	4.35
Wool Tares, light	4.25	"	4.50
Wool Tares heavy	4.50	"	5.00
Bright Bagging	4.50	"	4.85
Manila Rope—			
Foreign	—	"	—
Domestic	*5.75	"	—
Jute Threads	5.50	"	—
No. 1 Sisal Strings	*4.00	"	—
Mixed Strings	2.00	"	—

*OPA Maximum Price.

Old Waste Papers

(F. o. b. New York)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	@	—
No. 1 Hard White Envelope Cuts	3.12½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, one cut	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Mixed Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
Mixed Groundwood Colored Shavings	.90	"	—
Overissue Magazines	1.67½	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Mixed Books	1.10	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Mixed Ledger, colored	2.00	"	—
New Manila Envelope Cuttings, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
Extra Manilas	1.95	"	—
Mixed Kraft, Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
Triple Sorted, No. 1 Brown Soft Kraft	2.50	"	—
New 100% Kraft Corrugated Cuttings	2.25	"	—
No. 1 Assorted Old Kraft	1.75	"	—
New Jute Corrugated Cuttings	.90	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Box Board Cuttings	.72½	"	—
White Blank News	1.65	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
Old Corrugated Containers	.82½	"	—
Mill Wrappers	1.10	"	—

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.21	@	—
White Hemp	.21	"	—
Fine Polished—			
Fine India	.26	"	—
Unpolished—			
Box	.17½	"	—
Paper Makers	.17	"	—
Tube Rope	.19	"	—
Wall Paper	.20½	"	—
Wrapping	.23	"	—
Soft Fiber Rope	.19	"	—
Cotton	.25	"	—
(Hard Fiber)			
Medium Java	.18	"	—
Mex. Sisal	.14	"	—
Manila	—	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill.)

Shirt Cuttings—	
New White No. 1	.07¾
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—According to grades—	
Washable shredding	.01¾
Fancy Percales	.04¾
New Black Soft	.03¼
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¾
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¼

Domestic Rags (Old)

White No. 1—Repacked	3.80	@	—
Miscellaneous No. 1	3.20	"	—
Miscellaneous No. 2	2.65	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	—
Repacked	2.20	"	—
Black Stockings—(Export)	Nominal		
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	1.55	"	—
Domestic No. 2	1.45	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F. o. b. Phila.)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	"	3.50
No. 1 Clean bright—Sisal Strings			.04
No. 2 Clean bright—Sisal Strings			.03
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	1.25	"	1.30
No. 2	1.75	"	1.80
Wool Tares new	4.00	"	4.50
No. 1 New Light Burlap	3.00	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b. Phila)

OPA Maximum Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
Soft White Shavings, one cut	2.50	"	—
White Blank News	1.65	"	—
Soft White Shavings			
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	3.35
South American	—	"	3.25

POSTON

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

No. 1 Hard White Shavings, unruled	2.87½	@	—
No. 1 Hard White Shavings, ruled	2.50	"	—
Soft White Shavings, Misc.	2.15	"	—
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	1.12½	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.25	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	2.25	"	—
Ground Wood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Overissue News	1.10	"	—
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.40	"	—
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	—	@	2.50
Sisal Rope No. 1	*4.75	"	—
Sisal Rope No. 2	*4.25	"	—
Mixed Rope	—	"	1.55
Transmission Rope—			
Foreign	(nominal)		
Domestic	2.75	"	3.00
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Car Threads	3.00	"	3.50
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	—	"	3.35
South American	—	"	3.25

Old Papers

(F. o. b. Boston)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 2 Ledger, colored	2.00	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
Overissue Magazines	1.67½		
New Manila Envelope Cuttings	2.65	"	—
No. 1 Assorted Old Kraft	1.75	"	—
No. 1 Mixed Paper	.95	"	—
Box Board Cuttings	.72½	"	—
Kraft Corrugated Cuttings	2.25	"	—
Old Corrugated Containers	1.40	"	—
Overissue News	1.00	"	—
No. 1 News	1.00	"	—
Wool Tares—			
Foreign	(nominal)		
Domestic	4.25		
Aust. Wool Pouches	—	"	3.75
New Zealand Wool Pouches	—	"	3.50
New Burlap Cuttings	4.75	"	5.00
Heavy Baling Bagging	4.00	"	4.25
Paper Mill Bagging	2.50	"	3.00
No. 2 Roofing Bagging	1.35	"	—

*OPA Maximum Price.

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	04½	@	04¾
Fancy Percales	04¼	"	04
New White No 1	06¼	"	0
New Light Flannelettes	05¾	"	0
Canton Flannels, Bleached	.06	"	.06
Underwear Cutters, Bleached	.06¼	"	.06
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06
New Black Silesias	.03	"	.03
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.06½	"	.06
Blue Cheviots	.05½	"	.06
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.03½	"	.03
Corduroy	.03¼	"	.03
New Canvas	.06¼	"	.06
B. V. D. Cuttings	.06¼	"	.06

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.80
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.55	"	—
No. 2	1.45	"	—
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	5.75	"	—

*OPA Maximum Prices.

Foreign Rags

(F. o. b Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

OPA Maximum Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	3.37½	"	—
No. 1 Hard White Shavings, unruled	2.87½	"	—
No. 1 Soft White Shavings	2.50	"	—
No. 1 White Ledger	2.30	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
White Blank News	1.65	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
No. 1 Assorted Old Kraft	1.75	"	—
Overissue News	1.10	"	—
No. 1 News	1.00	"	—
No. 1 Mixed Paper	.95	"	—
No. 1 Roofing Rags	1.35	"	
No. 1 Roofing Bags	1.45	"	

SEABOARD'S Six

SIX GREAT STATES

Let us outline the advantages of Seaboard's six great states of opportunity.

You may utilize our experienced and competent staff to assist in your plant location problems.

All inquiries are held in confidence and involve no obligation.

SEABOARD AIR LINE RAILWAY

Write DALLAS T. DAILY, GENERAL INDUSTRIAL AGENT, SEABOARD AIR LINE RAILWAY, NORFOLK 10, VIRGINIA

West Virginia Pulp and Paper Company

230 Park Ave., New York
35 East Wacker Drive, Chicago
Public Ledger Building, Philadelphia, Pa.
503 Market St., San Francisco, Cal.

Manufacturers of

ENGLISH FINISH SUPERCALENDERED MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Charleston, South Carolina

ARE YOU READY FOR "V" DAY?

Prepare NOW to Take Care of Increased Orders Which Will Come. Consider Necessary Repairs and Maintenance.

Also New Equipment of Improved Designs and Efficiency.

PAPER BAG MACHINERY—PAPER MACHINES
THE NEW MODEL "E" PAPER TRIMMERS

THE SMITH & WINCHESTER
MANUFACTURING COMPANY
Plant and Offices at South Windham, Connecticut

WRITE FOR YOUR COPY of this BULLETIN 225

STEARNS Magnetic power transmission devices offer definite savings in operating costs and maintenance expense, provide efficient near or remote control — smooth acceleration with fast and positive stop.

For straight connection or disconnection, indexing or load protection, any of the wide variety of magnetic friction unit applications consult STEARNS MAGNETIC engineers. What's your problem? We invite your inquiry. No obligation.

STEARNS MAGNETIC MFG. CO.
609 S. 28th St. Milwaukee, Wis.

Stearns MAGNETIC
CLUTCHES - BRAKES
PULLEYS
DRUMS - ROLLS
SEPARATORS
MAGNETS
OF ALL KINDS

KOSMOS—DIXIE PARIS BLACKS

Unexcelled carbon black pigments for all types of paper and board stocks.

Outstanding for soft texture, particle fineness, and jet black color.

Best for performance in the Beater and Jordan because of ease of wetting and ready dispersion in the pulp.

Takes well to the fiber and shows high retention.

UNITED CARBON COMPANY, INC.
Charleston, West Virginia
New York Akron Chicago

FOR SALE

LABORATORY BEATERS

1—30 lb. Noble & Wood Laboratory Beater, with motor (complete in every detail).
1—12 lb. Noble & Wood Cycle Beater, with motor (complete in every detail).

BEATERS

2—2000 lb. Holyoke Iron Tub Beaters.
1—1000 lb. Dayton Beater.
2—400 lb. Gavit—iron tub beaters.

BLOWER

1—50" Buffalo.
Various other sizes.

CALENDER STACKS

1—11-Roll 92" Face Calender Stack—complete with Drive.
1—36" 7-roll—Holyoke Machine.
1—77" 2-roll—Moore & White.
1—86" 5-roll—Black-Clawson.

CENTRAP

1—Shartle Brothers Centrap.

CYLINDER MOULDS

1—48" Diameter x 96" Face.
8—30" diameter x 72" face.
3—30" diameter x 74" face.
1—36" diameter x 90" face.

DRIVES

2—D. O. James 75 H.P. Speed Reducers with couplings and motor bases. Ratio 2.16 to 1. 900 RPM to 418 RPM.
1—#6 Reeves Drive (practically new).
1—Pulmax Drive.

DRYERS

24—Dryers—36" Diameter x 82" Face.
1—48" diameter x 94"face.
1—36" x 44" face—with frames and bearings.
1—24" diameter x 84" face. (Baby).
1—16" diameter x 84" face. (Baby).
3—36" diameter x 116" face.
2—28" diameter x 68" face.

EMBOSSER

1—28" two roll Embossing Calender.

ERKENSTATORS

3—I. W. E. Erkenstators—bronze construction—complete with motors, starters and distributing box.

JORDANS

1—Pony Horne Jordan. Spare New Fillings.
1—Black-Clawson Jordan (belt driven).
1—#9 Emerson Jordan—for direct connection of a motor — requires use of 400 H.P. motor.
1—Smith & Winchester.

PULP EQUIPMENT

1—84" Carthage Chipper—complete and in excellent condition.
1—32" three pocket Glens Falls Grinder (for 27" wood).
3—Rotary incinerators—9' diameter x 20' long.
4—27" four pocket Sandy Hill grinders (for 24" wood—including 1000 H.P. motor for each, starting equipment, etc.).

PULPERS

1—#2 Lannoye Pulper.
1—Jones Pulper — direct connected to 60 H.P. motor—3 phase, 60 cycle, 440 volts —forward and reverse starting.

PUMPS

1—Buffalo Pump—5500 g. p. m., direct connected to 100 H.P. Motor (50' head).
Various sizes of Centrifugal and Plunger Pumps. Write us regarding your particular requirements.

REELS

1—2 Bowl Reel — 112" face — bowls 20" diameter.
1—2 Bowl Reel—63" face.
1—2 Bowl Reel—110" face.

REFINERS

2—#1 Claflin Refiners.

ROLLS

500—Brass tube—steel tube—rubber covered iron rolls—various sizes.

RUBBER COUCH ROLL

1—72⅛" Face x 9" diameter (soft rubber).

SAVEALLS

1—#6 Bird Saveall—Mold 43 x 125—including couch roll.
1—Shartle Bros. decker 36" diameter x 60" face, including couch roll.
1—North Saveall—cylinder mould 72" diameter x 100" face.

SHREDDERS

1—#25 CRSE Mitts & Merrill Hog.
1—Gilman Shredder—used one year.
1—Taylor Stiles #5 Pulp Shredder.

SHEETERS

1—110" Horne single knife rotary sheet cutter.
1—48" Langston heavy duty chopper (this is a combination machine, combining a slitter, scorer, sheeter and chopper.)

SIZING MACHINE

1—36" Waldron sizing machine.

SLITTERS

1—114" Two drum Langston Slitter & Winder.
1—110" Beloit slitter (slitter attachment only).
1—114" Two drum Kidder slitter and winder.
1—36" Koegel slitter and winder.
1—Warren 72" trim, two drum slitter and winder.

SUCTION BOXES

1—Nash 100" face Suction Box.
3—Brass Suction Boxes—90" drilled face.
2—Brass Suction Boxes—77⅛" drilled face.

SUCTION COUCH ROLL

1—Sandusky Suction Couch Roll — 18" diameter x 130" face — Complete with Sturtevant Vacuum Pump and drive mechanism.

SUCTION PRESS ROLL

1—Sandusky suction pres roll, 14 9/16" diameter x 68" drilled face.

J. J. ROSS CO., 250 Frelinghuysen Avenue, Newark 5, New Jersey
TEL. BIGELOW 3-3720 M-10

We are always in the market to purchase your surplus or idle machinery. What have you to offer?

HELP WANTED

CHARLES P. RAYMOND SERVICE, Inc.
284 Washington St., Boston, Mass.
Specializing in Paper Mill Personnel
Positions Now Open

Sales Manager kraft paper and kraft board mill $8,000 to 12,000 year
Plant Engineers and master mechanics $5,000 to $6,000 year
Draftsmen and designers
Post-war planning engineer $6,000-8,000 year
Chemists and laboratory men $3,500-6,500 year
Felt superintendent
Cost accountants and office managers
Mechanical engineers
Power plant (chief) engineers
Development engineer packaging equipment
Assistant director technical control
Manager large converting plant
Coating department superintendent
Millwrights, beater engineers, machine tenders, back tenders and many others

We invite correspondence (strictly confidential) with employers seeking personnel and men seeking new positions. M-10

A PULP AND PAPER COMPANY LOCATED IN THE NORTHEAST COAST REGION

would like to receive applications from

GRADUATE CHEMISTS
GRADUATE CHEMICAL ENGINEERS
GRADUATE MECHANICAL ENGINEERS
COMBUSTION ENGINEERS

who are available for immediate employment or interested in post-war employment.

MEN WITH EXPERIENCE IN PULP AND PAPER MILL OPERATIONS ARE PREFERRED

Address Box 45-274 care Paper Trade Journal. M-31

PLANT MANAGER—Established Philadelphia Plant making high quality bags (self-opening, squares, flats, sacks, specialties) want plant manager experienced in handling production and personnel in union shop. Give full qualifications. Replies held in strictest confidence. Address Box 45-196 care Paper Trade Journal. M-31

HELP WANTED

SALES MANAGER

For paper carton specialties. Thoroughly experienced in sales promotion and specialty development. Complete outline of personal record requested.

EMPIRE BOX CORPORATION
Palmolive Bldg., Chicago, Ill. M-17

One Grad. Chemist or Chemical Engineer with at least two years Pulp or Paper Mill experience for large diversified Pulp & Paper Mill at Ocean Falls, B. C., on Canadian West Coast.

Good opportunity for right man Age 24-35 Salary $200.00-$250.00 per month

Apply Pacific Mills Limited, Ocean Falls, British Columbia.

If a technical person within the meaning of P.C. 246 Part 3 January 1943, do not apply unless your services are available under regulations administered by the Wartime Bureau of Technical Personnel. M-24

WANTED — Licensed Steam Engineer. One capable of handling maintenance and operation in paper mill on Pacific Coast. Apply in own handwriting stating experience, references and salary wanted. Address Box 45-244 care Paper Trade Journal. TF

HELP WANTED

PAPER EXECUTIVE

Experienced, thorough, with mill contacts, required by progressive export paper house; unusual opportunity; state age, experience, salary required.

Address Box 45-266 care Paper Trade Journal. M-17

A PULP AND PAPER COMPANY LOCATED IN THE NORTHEAST COAST REGION

would like to receive applications from

STEAM PLANT SUPERINTENDENTS
STATIONARY ENGINEERS

who are available for immediate employment or interested in post-war employment.

MEN WITH EXPERIENCE IN PULP AND PAPER MILL OPERATIONS ARE PREFERRED

Address Box 45-275 care Paper Trade Journal. M-31

HELP WANTED for New England Book and Specialty Mill — Fourdrinier Machine. One Beater Room Supervisor, experience with colors necessary. Three Machine Tenders. Three Back Tenders. Address Box 45-268 care Paper Trade Journal. M-24

It's easier to thread a vertical dryer than to take a sheet over a horizontal job.
Nor do you need a contractor, a carpenter crew, and a fortune in building materials to extend your machine room to get additional capacity.

NO HELICOPTER NEEDED TO THREAD VERTICAL DRYERS

Nor do you have to worry about the drying job you'll get. The many mills using verticals, on both heavy and lighter grades, are proof of that.
While you are planning the modernizing of your mill, include verticals when you come to the dryer section of your machine, or machines. Certainly, you can use your present dryers—as far as they'll go—if in good condition.
Further data—a wealth of it—on request; also engineering service.

THE BLACK-CLAWSON CO., Hamilton, Ohio

Divisions:
SHARTLE BROS., MIDDLETOWN, OHIO.
BILTS MACHINE WORKS, FULTON, NEW YORK.

HELP WANTED

WANTED

ENGINEERS and DESIGNING DRAFTSMEN experienced in pulp and paper mill design and process by Consulting Engineers. Address Box 45-146 care Paper Trade Journal. T.F.

EGG CARTON SALESMAN WANTED

Must be thoroughly familiar with production and marketing so as to build up "patented egg carton" business for large folding box manufacturers.

Address Box 45-255 care Paper Trade Journal M-10

CHEMICAL AND MECHANICAL ENGINEERS

Wanted for senior positions in manufacturing control in a large printing and converting plant in Niagara Falls. Should be college graduates preferably with paper mill or manufacturing control experience. Give personal data, experience, and salary desired.

Apply B. J. Stanoslow, Moore Business Forms, Inc., Research and Service Division, United Office Building, Niagara Falls, New York. M-17

CHEMIST or CHEMICAL ENGINEER

Development work. Experienced in preparation of wood fibre and general fibre technology—specifically, the cooking, beating, refining and use of wood fibre on paper machines. Marvelous opportunity for the right man. Company is now engaged in essential industry and has unexcelled post war future. Location—Metropolitan New York Area.

Send complete resumes to Box 45-260 care Paper Trade Journal. M-10

WANTED—Experienced Millwright for small mill in Northeastern Pennsylvania. State age, experience and salary expected. Address Box 45-250 care Paper Trade Journal. M-17

SUPERINTENDENT for finishing department in large modern midwestern paper converting plant. Must be expert in laminating and coating of paper, plating, stack and friction calendering, and have a good chemistry background in paper and related materials. Knowledge of water-proofing of paper and application of lacquer and plastic coatings necessary. Address Box 45-210 care Paper Trade Journal. TF

SALARIED POSITIONS — This advertising service of 35 years' recognized standing negotiates for high salaried supervisory, technical and executive positions. Procedure will be individualized to your personal requirements and will not conflict with Manpower Commission. Retaining fee protected by refund provision. Identity covered and present position protected. Send for details. R. W. BIXBY, INC., 117 Delward Bldg., Buffalo, 2, N. Y. tf

WANTED—CHIEF CHEMIST for pulp and paper mill located on Pacific Coast. Apply in own handwriting giving references, experience and other pertinent information. Address Box 45-243 care Paper Trade Journal. TF

COST ACCOUNTANT—.009 straw or box board mill located in the middle west. State salary wanted. Address Box 45-262 care Paper Trade Journal. M-24

MECHANIC familiar with rotogravure and analine printing, also general paper converting. Good opportunity for right man. Address Box 45-280 care Paper Trade Journal. M-10

SITUATIONS WANTED

SUPERINTENDENT — Twenty years experience on folding, set-up, test liner board and sulphite specialties. Last five years as superintendent. Will consider tour boss position, offering a better opportunity to young man with initiative. Excellent reference. Address Box 45-237 care Paper Trade Journal. M-10

FOR SALE

FOR SALE

FOR SALE

by JACK ROSS PAPER MACHINERY CO.

17 Porter Avenue, Newark 8, N. J.

Waverly 3-5675

1—Improved Paper Machinery Company 3 roll Hydraulic Wet Machine. Cylinder Mold 36" diameter 84" face. Complete with enclosed drive. Prints and photos on request. Used 1 year.
2—Pusey & Jones Horizontal Digesters, Welded equipment with Logan Circulators. 24' high x 7' diameter. 125# working pressure. Prints on request.
1—Guyton-Cumfer Saturator. Tank 50" wide. 5 gates complete. Prints on request.
1—Waterbury Hydraulic Variable Speed Transmission. Size 50—Type C. Maximum HP 80. Maximum RPM 400.
1—Moore & White Flat Screen. 16 plates 12" x 24" .015 cut.
1—Moore & White Flat Screen. 20 plates 12" x 24" .015 cut.
1—Packer Flat Screen. 10 plates 12" x 42" .015 cut.
1—36" diameter x 84" face Cylinder Mold. New backing wire. New face Wire. 65 mesh. Extra heavy construction.
1—2" to 6" Oster Pipe Threading Machine. Direct connected to motor 440-3-60.
2—#3 Vertical Reeves Drives totally enclosed—ball bearing equipped. Ratio 5:1. Used year and a half.
1—15 h.p. Reliance Motor 220-440-1750 R.P.M. Ball bearing. Used year and a half.
10—Driers—112" face x 48" diameter complete with 2 deck frames, gears, etc.
2—Norwood Engineering Co.—44" two roll platers direct connected to 15 h.p. motors.
1—90" Voith Inlet.
1—A. D. Wood Saveall—cylinder—60" face by 48" diameter—ball bearing equipped—rebuilt—specifications on request.
1—No. 1 Voith Pulper—capacity 20 tons per day—requires 20 h.p.
1—42" Liner and combining machine. Fourteen 6" diameter steam heated rolls and one drier 24" diameter.
1—60" face—16" diameter couch roll—one and ½" rubber—ball bearing equipped—used two months.
3—Improved Paper Machy. Corp. #2 Knotters Bronze fitted. Good condition. Prints on request.
1—#2 Miami Jordan ⅜ bronze fillings for direct connection to motor.
2—14"x20" Connersville Vacuum Pumps. These pumps are fully rebuilt.
3—12"x18" Connersville Vacuum Pumps. These pumps are fully rebuilt.
1—Downingtown 2500 lb. Iron Tub Cyclone Beater. Beater rolls 60" face, 72" diameter. This beater is in excellent condition, having been in operation less than 2 years. Prints on request.
1—44" Waldron drum reeling and rewinding machine.
2—Holyoke Platers—2 roll, 36" face x 18" diameter—complete with drive.
1—Nichols-Herreshoff Lime Kiln—vertical 65 tons capacity. Prints on request.
1—72" two drum Pusey & Jones Slitter & Winder will rewind 40" diam. rolls.
1—100" two drum Warren Slitter & Winder.
1—100" Two Bowl Reel—Bowls 20" diam.
1—E. D. Jones Standard Jordan with fast coupling and extended base for direct connection to motor.
1—Farrel Roll Grinder will take rolls 28" diam. 18' long. Motor equipped. 2—10 h.p. Motors. 1—15 h.p. Meter—Excellent condition. Photos on request.
1—156" Moore & White 4 drum uniform speed slitter & winder. 5 sets of King type slitters.
1—Williams #30 type G. A. Bark Hog with 125 h.p. Synchronous motor. Ball bearing equipped and new spare parts—used one year.
1—Sumner Disc Barker—72" diam. disc. Anti-friction bearings. Direct connected 30 h.p. motor. used 5 months.
1—140" two drum Warren Slitter & Winder.
45 Driers—96" face x 28" diameter complete with 2 deck frames, gears and bearings. M-10

SITUATIONS WANTED

WANTED—Millwright, full charge maintenance in wet machine mill. Up to date plant in good condition located in New England. Permanent position for right man. Address Box 45-259 care Paper Trade Journal. M-31

SUPERINTENDENT available for Board Mill. High grade folding boards, sulphite groundwood specialties, kraft, etc. Address Box 45-270 care Paper Trade Journal. M-24

ACCOUNTANT 25 years in Board Industry. Experience includes costs—payroll—personnel work—billing—office manager and some selling. Wishes to join sound organization. Your confidential replies solicited. Address Box 45-279 care Paper Trade Journal. M-24

PAPER CONVERTING FOREMAN—18 years experience paper cutting, straight and die cutting. Many years successful handling of men. Seeks position Metropolitan Area. Address Box 45-278 care Paper Trade Journal. J-28

FOR SALE

FOR SALE

New and guaranteed used steel pipe, boiler tubing, valves, fittings, wood and steel tanks, steel buildings

JOS. GREENSPON'S SON PIPE CORP. NATIONAL STOCK YARDS, Illinois.

S-6

FOR SALE

FOR SALE

34" Sheridan "New Model" Automatic Power Cutter.
40" Oswego hand clamp Power Cutter.
44" Seybold Holyoke Auto. Power Cutter.
63" Oswego Mill Type Cutter, power back gauge.
50" Clark Sheeter.
110" Hamblet heavy duty Sheeter with backstand.
68" Rice Barton & Fales Slitter & Rewinder, for use on dry end of paper machine.
120" Moore & White 4-drum Rewinder.
36" Waldron Embosser.
4 Waldron 36" Paper Reels.

THOMAS W. HALL COMPANY, Inc.
120 West 42nd St., New York 18, N. Y.
TF

FOR SALE

1—Complete 98" Fourdrinier Paper Machine with 26 Dryers, 48" diameter x 96" face, including auxiliary equipment. Additional details on request.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Telephone Bigelow 3-3720

MACHINERY WANTED
By JACK ROSS PAPER MACHINERY CO.
17 PORTER AVENUE, NEWARK 8, N. J.
Waverly 3-5675

Cash purchaser of all types of paper, pulp and converting equipment.
From single items to complete plants.
Write, telephone or wire whatever you have for sale.

FOR SALE

FOR SALE

1—18"x20" Beloit Triplex Stock Pump.
1—Garment Bag Machine, smallest bag 17½" wide by 30" long. Largest bag 23" wide by 62" long.
1—7-Roll 48" wide Holyoke Super Calender Stack, complete with 50 H.P. G. E. a.c. 3 phase 60 cycle, 220 volt motor equipment. Machine in perfect condition.
1—64" Pusey & Jones Wet Machine, 36" diameter cylinder mould including vat.
1—Noble & Wood Mammoth Jordan with new shell and plug fillings.
1—62" Butterworth Heavy Type Embossing Machine equipped with Levant leather design embossing roll. Complete and in good condition. Will emboss board or paper.
1—44"x68" Seybold Press. Mill type, weighs 20,000 lbs. Perfect condition.
Complete line of self-opening bag machines from 1 to 35 lbs. Also, flat and square bag machines from 1 to 20 lbs.
3—Beloit Triplex Plunger Stock Pumps, sizes 8" x 12", 9" x 12" and 10" x 10".

GIBBS-BROWER COMPANY, INC.
21 East 40th St., New York 16, N. Y.
TF

FOR SALE

1—60 H.P. Fairbanks Morse Diesel Engine, connected to a 40 KVA Generator.

1—100 H.P. Ames Steam Engine, connected to a 75 K.W. Westinghouse Generator.

1—50 H.P. Ames Economy type boiler.

1—150 H.P. G. E. Induction Motor—3/60/220—875 r.p.m.—including starting equipment.

J. J. ROSS COMPANY
250 Frelinghuysen Ave., Newark 5, N. J.
Bigelow 3-3720 M-10

FOR SALE

Erie Layboy and
Auxiliary Equipment

A. P. W. PRODUCTS COMPANY, INC.
P. O. Box 111
Albany 1, N. Y.
M-10

FOR SALE

2—No. 6 Nash pumps, one new in 1939 with rated efficiency 71%, the other new in 1940 with rated efficiency of 84%.
1—Trimbey pulp screen, Model No. 151, .090 perforations.
2—1500 lb. wood tub Jerus Beaters Rolls 65x54. Also 2—Midwest Fulton 2000 lbs. iron tube high speed beaters; excellent condition

FRANK H. DAVIS COMPANY
175 Richdale Avenue
Cambridge 40, Massachusetts
M-17

FOR SALE—Nash L-6 Hytor Vacuum Pump, "V" belt drive, 450 cfm; Valley Iron Works 100 lb. Beater. BRILL EQUIPMENT COMPANY, 225 W. 34th St., New York, 1, N. Y. M-17

FOR SALE

FOR SALE

8—Shartle Triplex Stuff Pumps
1—Sturtevant Bale Shredder
2—36"x84" cylinder molds with ball bearings
1—119" 7 roll stack calenders
1—90" set smoothing rolls complete
1—112" set smoothing rolls complete
2—106" set smoothing rolls
2—82"x16" bottom press rolls
1—82"x18" brass top press roll
1—82"x16" bottom press roll
6—M. & W. Expansion Winder Shafts
1—Fan pump 12" inlet 8" outlet

Address Box 45-276 care Paper Trade Journal. M-17

FOR SALE

One Knowlton Paper and Paperboard Slitter and Rewinder 69" wide double shaft rewind, 7 sets shear cut knives, 7½ H.P. A.C. Motor 440 Volt with Reeves Drive and with complete push button control.

THEO. ADAMS
111 W. Washington St.
Chicago 2, Illinois M-10

FOR SALE

86" Sandy Hill revolving single knife cutter with spare drum.
Economy Telescope Portable Lifter 1500# Capacity, with 2 H.P. Motor.
Dings Metal Extractor pulley type complete with motor generator set.
Two (2) Toledo Grain Scales, Chart 0 to 500 Grains.

Address Box 45-263 care Paper Trade Journal. M-17

FOR SALE

3—63" Dietz Toilet Convertors

J. J. ROSS COMPANY
250 Frelinghuysen Ave.
Newark 5, N. J.
Bigelow 3-3720 M-10

FOR SALE

Sheet Cutters:
3—56" Hamblet sheet cutters with pilers and backstand.
5—64" Hamblet sheet cutters with pilers and backstand for some of these cutters.
Material is now running, in good condition.

FRANK H. DAVIS COMPANY
175 Richdale Ave., Cambridge 40, Mass.
M-10

PAPER COATING MACHINERY — Waxing Oiling, Gumming, Gluing, Carbon, Laboratory Coating and Treating Machines. High speed. New improvement. MAYER MACHINE COMPANY, Inc., 1155 Scottsville Road, Rochester, 11, N. Y. TF

FOR SALE—One *Used* Knowlton 16" Convolute Paper Tube Winder with label attachment and special paraffin attachment Reeves Drive. Late model. No priority required. Immediate shipment. THEO. ADAMS, 111 W. Washington St., Chicago, 2, Ill. M-17

FOR SALE—80" Finley Sheeter with slitting attachments; 66" Clark Sheeter. Address Box 45-282 care Paper Trade Journal. M-17

FOR SALE

FOR SALE—1 Hamilton-Corliss Variable Speed Twin Engine, size of cylinders 12" x 24". Also Triple-Deck Frames for ninety 36" dryers, any width. The Chesapeake Paperboard Co., Baltimore, 30, Md. TF

FOR SALE—1—Griley Unkle 50 tons per 24 hours Breaker Beater with Hood Extractor complete with one 100 horse power Slipring Motor, V Belts and Starting Equipment for same, also circular pump for beater. Sangamon Paper Mills, 3915 S. LaSalle Street, Chicago, Illinois. M-10

FOR SALE—64" Seybold Twentieth Century Cutter, guaranteed to be in good working order. Address Box 45-281 care Paper Trade Journal. M-10

WANTED

WANTED

CALENDER STOCK—10" INTERMEDIATE ROLL MINIMUM
ALSO
SHEETER—SINGLE OR DOUBLE CUT-OFF BOTH FOR 72" MACHINE

Address Box 44-728 care Paper Trade Journal. TF

WANTED

One (1) Laboratory Beater
Waterbury Hydraulic Drive size 5
11—60" Diameter x 92" Face Dryers
18—48" Diameter x 92" Face Dryers
4—36" Diameter x 82" Face Dryers

with gears, frames, felt rolls and cone pulley drives. Address Box 44-768 care Paper Trade Journal. TF

WANTED — DISCARDED PAPER MILL FELTS. HIGHEST PRICES paid for all kinds of discarded paper mill felts. LARGE or SMALL QUANTITIES accepted. Prices quoted immediately on receipt of samples. ADDRESS: GLASER AND YOFFE, INC., 80 NORTH MAIN ST., NATICK, MASS. TF

WANTED—Any Item of Paper Tube and Paper Can Machinery, Slitters, Tube Winders, Cutters, etc. etc. We will buy such machinery in any condition. Theo. Adams, 111 W. Washington St., Chicago, 2, Ill. TF

WANTED—W & P Shredders, Evaporators, Generators and Boilers, Slitters, Cutters, Hydraulic Presses, Sheridan Presses, Dryers. Address Box 44-835 care Paper Trade Journal. tf

WANTED—Brightwood Box Machine. Address Box 44-836 care Paper Trade Journal. tf

WANTED—Yankee Dryer not less than 60" face, 84" to 120" diameter, give full particulars as to age and condition. Address Box 45-258 care Paper Trade Journal. M-17

WANTED in Good Condition—Bronze Breast Roll, or a straight couch roll, 18" diameter, 155" face. Address Box 45-264 care Paper Trade Journal. M-10

WANTED TO BUY—Duplex Cutter, 100-120" face. Advise price and condition. Address Box 45-261 care Paper Trade Journal. M-10

WANTED

WANTED—Double drum slitter and rewinder to take paper 60" wide, make roll 36" diameter, speed up to 600 F. P. M. for installing on paper machine. Cameron preferred. Give full description and price. Address Box 45-224 care Paper Trade Journal. M-10

WANTED—1 Cylinder Mould complete with vat 36" x 48" or 36" x 54". Also 8 Dryers size 36" x 48" complete with gears, bearings, frames, etc., if possible. Address Box 45-273 care Paper Trade Journal. M-10

WANTED — Used Paper Bag Machines for making flat and square specialty bags. Address Box 45-277 care Paper Trade Journal. M-10

WANTED—Paper Mill, preferably in the East, making from 5 to 20 tons per 24 hours of writing and ledger paper. Address Box 45-283 care Paper Trade Journal. M-10

OPPORTUNITY

40,000 sq. ft. warehouse space on Illinois Central, Louisiana & Arkansas and Cotton Belt trackage.
Space lease or warehouse receipt of storage.
Perfectly located for distribution to Ark-La-Tex area.
Office & display space available.
Within 5 minutes of financial district of downtown Shreveport.

—o—

Site suitable for manufacturing or assembly operations.
300 h.p. steam generating & power plant ready for operation on premises.

—o—

JOHNSON & HELM
P.O. Box 541—Bossier City Sub-station
SHREVEPORT, LA.
M-10

GOVERNMENT BIDS

PROPOSALS FOR THE SALE OF REFUSE WOOD AND SAWDUST AND THE REMOVAL OF DEBRIS.

U. S. GOVERNMENT PRINTING OFFICE,
WASHINGTON, D. C., *May 7, 1945.*

Sealed proposals will be received at this office until 2 o'clock p. m., May 28, 1945, for the disposal and sale of Refuse Wood and Sawdust which may accumulate, and for the removal of debris from the Government Printing Office during the fiscal year beginning July 1, 1945. The right to reject any and all bids and to waive defects is reserved. Detailed specifications of the estimated quantities to be sold, accompanied by blank proposals and giving regulations with which bidders must comply, may be obtained by addressing,

A. E. GIEGENGACK,
Public Printer. M-17

CLASSIFIED ADS BRING RESULTS

CLASSIFIED ADVERTISING RATES

HELP WANTED— 5c a word. Double rate for heavy face type. Minimum charge $1.25.

SITUATIONS WANTED— 5c a word. Double rate for heavy face type. Minimum charge $1.25. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE— 5c a word. Double rate for heavy face type. Minimum charge $1.25.

WANTED— 5c a word. Double rate for heavy face type. Minimum charge $1.25.

OPPORTUNITIES— 5c a word. Double rate for heavy face type. Minimum charge $1.25.

All advertisements—per column inch—$3.00

ALL CLASSIFIED ADVERTISEMENTS ARE PAYABLE IN ADVANCE

Address replies to advertisements appearing under Box numbers in care of

PAPER TRADE JOURNAL 15 West 47th Street, New York 19, N. Y.

FEEDOWEIGHT
for accurate feeding of salt cake and other materials. Also weighs and totalizes the weight.
Send for Bulletin #388
MERRICK SCALE MFG. CO.
PASSAIC, NEW JERSEY

Appleton Felts
MAKE GOOD PAPER
APPLETON WOOLEN MILLS
APPLETON, WISCONSIN

DEINKING — DECOLORIZING
K-121-B and K-C-2
COOKING PROCESSES
THE KINSLEY CHEMICAL COMPANY
2500 Berea Road Cleveland, Ohio

INTERNATIONAL TALC CO., INC.
Formerly International Pulp Co.
NEW YORK CITY
ASBESTINE FILLER
90% Retention
Reg. U. S. Patent Office

PERFORATED METAL SCREENS
MADE SPECIALLY FOR PAPER and PULP MILL USE
Copper, Bronze, Steel, Stainless Steel and other metals, Heat-treated.
HENDRICK MFG. CO.
88 Dundaff St., Carbondale, Pa.
Offices in Principal Cities

MISCO "C"
THE CORROSION RESISTANT ALLOY
CAST • ROLLED • FABRICATED
for all equipment exposed to corrosion by sulphite acids
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

CHAS. T. MAIN, INC.
Consulting Engineers
201 Devonshire St., Boston, Mass.
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Process Studies, Design, Specifications and Engineering Supervision
Reports, Consultation, and Valuations

GEORGE F. HARDY
Consulting Engineer to the Paper Industry since 1900
441 Lexington Ave., New York 17, N. Y.
Member—Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst. Can.
Consultation — Paper and Pulp Mills
Reports — Hydro-Electric and
Valuations — Steam Power Plants
Estimates — Plans and Specifications

PAPER MILL CONSTRUCTION
Complete Service — Undivided Responsibility
Buildings — Docks
Machinery Installation — Foundations
ENGINEERING CONSTRUCTION DIVISION
MERRITT-CHAPMAN & SCOTT CORPORATION
17 BATTERY PLACE NEW YORK, N.Y.

HARDY S. FERGUSON & CO.
Consulting Engineers
200 FIFTH AVENUE, NEW YORK CITY
Hardy S. Ferguson.....Member A.S.C.E., A.S.M.E., E. I. C.
Moore H. Teare.....Member A.S.M.E., E. I. C., A.S.C.E.
Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of
Pulp and Paper Mills and other Industrial Plants
Steam and Hydro-Electric Power Plants
Dams and Other Hydraulic Structures

PULP MILL MACH'Y — FINISHING ROOM MACH'Y
FRICTION CLUTCHES
The MOORE & WHITE CO.
PHILADELPHIA, PA.
N. PHILA. STA. PENNA. R.R.
PAPER MILL MACHINERY

COVEL-HANCHETT KNIFE GRINDING SERVICE
Advanced Constructions, Developed By
The Pioneers in the Industry
COVEL-HANCHETT CO., Big Rapids, Mich., U. S. A.

Write for Bulletin 2200-P2
38 POINTS of SUPERIORITY
Type 36-2 ROTARY DISC REFINER
SPROUT-WALDRON & CO. MUNCY, PA.

Appleton Wires are Good wires
APPLETON WIRE WORKS, INC. APPLETON, WIS.

For High-Speed, Dependable
PAPER CONVERTING MACHINES
contact
POTDEVIN
Paper Bag Machines, Aniline & Oil-Ink Presses, Waxing, Gluing, Varnishing, Laminating Machines.
POTDEVIN MACHINE CO.
EST. 1893
1223 38th ST BROOKLYN N.Y.
POTDEVIN

A TYPE AND SIZE FOR EVERY NEED IN MILL, FINISHING ROOM, CONVERTING PLANT
SAMUEL M. LANGSTON COMPANY, Camden, New Jersey

SCREENS of Perforated Metal
The Harrington & King PERFORATING Co.
5652 Fillmore St., Chicago 44, Ill. 114 Liberty St., New York 6, N. Y.

TECHNICAL BOOKS AVAILABLE
BIBLIOGRAPHY OF PAPERMAKING, Vol. 1 (1900-1928) — $10.00
PAPER MAKING MATERIALS (Reading List) By Clarence J. West, Ph.D. — $3.00
LOCKWOOD TRADE JOURNAL CO., INC.
15 W. 47th St., N. Y. C.

STEAM TURBINES — CENTRIFUGAL PUMPS
HELICAL GEARS — PROPELLER PUMPS
WORM GEARS — GLOBLESS PUMPS
CENTRIFUGAL BLOWERS — MIXED-FLOW PUMPS
AND COMPRESSORS — DE LAVAL-MODEL PUMPS
DE LAVAL STEAM TURBINE CO.
TRENTON 2, NEW JERSEY

WHERE TO BUY

ABRASIVES
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Monsanto Chemical Co.
Norton Co.

ADHESIVES
Ambel Mfg. Co.
National Adhesives Division of National Starch Products, Inc.
Philadelphia Quartz Co.
Stein, Hall & Co., Inc.
United States Rubber Co.

AGITATORS
Appleton Machine Co.
Dilts Machine Works, Inc.
Derr Company
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Montague Machine Co.
Moore & White Co.
Noble & Wood Machine Co.
H. K. Porter Company Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

BAG MACHINES
Thomas W. Hall Co., Inc.
Pestevin Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Weber, Herman G.

BARKERS AND CHIPPERS
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Carthage Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

BARS
Dilts Machine Works, Inc.
E. D. Jones & Sons Co.
The Moore & White Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BEARINGS
Black-Clawson Company
Jones, E. D. & Sons Co.
The Manhattan Rubber Mfg. Co.
Montague Machine Works
Rollway Bearing Co.
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
SKF Industries Inc.
Timken Roller Bearing Co.
Valley Iron Works Co.
T. B. Woods' Sons Company

BEATERS & JORDANS
The Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Herman Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
J. J. Ross Company
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

BED PLATES
Bahr Brothers Mfg. Co.
Dilts Machine Works Inc.
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Simonds Worden White Co.
Valley Iron Works Co.

BELTING
Allis-Chalmers Mfg. Co.
The Cincinnati Rubber Mfg. Co.
Graton & Knight Company
The Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
J. E. Rhoads & Sons
United States Rubber Co.
T. B. Wood's Sons Company
Worthington Pump & Machinery Corp.

BLEACHING APPARATUS
Improved Paper Machy. Corp.
E. D. Jones & Sons Co.
Perkins & Sons, Inc., B. F.
Moore & White Co.
Niagara Alkali Co.
Noble & Wood Machine Co.
Pennsylvania Salt Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

BLOW PIPES & PITS
Montague Machine Co.
Moore & White Co.
Murray Mfg. Co., D. J.
Walworth Company
Valley Iron Works Co.

BOTTOMS
Harrington & King Perforating Co.
Kalamazoo Tank & Silo Co.

CALENDERS
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co., Inc.
Lobdell Car Wheel Co.
Moore & White Co.
Perkins & Son, Inc., B. F.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
Waldron Corp., John

CASEIN
Packing Products Co.

CASTINGS
Appleton Machine Co.
Black-Clawson Company
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Fort Pitt Steel Casting Co., Div. H. K. Porter Company, Inc.
The Frederick Iron & Steel Co.
Grinnel Company
Hamblet Machine Co.
E. D. Jones & Sons Co.
Lobdell Car Wheel Co.
Magnus Metal Corp.
Montague Machine Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Smith & Winchester Mfg. Co.
Traylor Engineering & Mfg. Co.
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Co.
Walworth Company

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Nichols Engrg. & Research Corp.
Ross J. O. Eng. Co.
Shartle Brothers Machine Co.

CHEMICALS
Aktivin Corporation
Amer. Cyanamid & Chem. Corp.
Ansul Chemical Co.
Calco Chemical Co.
Diamond Alkali e.
Dispersion Process Inc.
Dow Chemical Company
E. I. du Pont de Nemours & Co., Inc.
General Dyestuff Corp.
Geigy Co., Inc.
Gottesman & Co.
Hooker Electrochemical Company
The Mathieson Alkali Works, Inc.
Monsanto Chemical Company
The Neville Company
National Oil Products Co.
Naugatuck Chemical Div. of U. S. Rubber Co.
Niagara Alkali Company
Paper Makers Chemical Department, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Pioneer Salt Company
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Stauffer Chemical Company
United States Rubber Co.
Witco Chemical Co.
Wyandotte Chemicals Corp.

CLEANING MATERIALS
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
E. I. du Pont de Nemours & Co., Inc.
Oakite Products, Inc.
Paper Makers Chemical Department, Hercules Powder Co.
Magnus Chemical Co.
Nichols Engrg. & Research Corp.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Pittsburgh Plate Glass Co., Columbia Chemical Division
Solvay Sales Corp.
Wyandotte Chemicals Corp.
J. B. Ford Division

CLUTCHES
Appleton Machine Co.
Black-Clawson Company
Hudson Sharp Machine Company
Farrel-Birmingham Co.
Fawick Airflex Co., Inc.
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Stearns Magnetic Mfg. Co.
Valley Iron Works Co.
T. B. Wood's Sons Company

COATING MACHINERY
Hudson Sharp Machine Company
Moore & White Co.
Pestevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corporation, John
Weber, Herman G.

COMPRESSORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
Nash Engineering Co.
Worthington Pump & Machinery Corp.

CONSULTING ENGINEERS
W. H. L. D. Betz
Frederic C. Clark
Ferguson, Hardy S.
Hardy, George P.
Johnson & Wierk, Inc.
The Kohler System Company
Main, Inc., Chas. T.
J. E. Sirrine & Co.
Stone & Webster Engrg. Corp.

CONVEYORS
Black-Clawson Company
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

CORES
Elixman Paper Co.
Sonoco Products Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Smith & Winchester Mfg. Co.
Walker-Goulard-Plehn Co.

COUPLINGS
Black-Clawson Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works
Waldron Corp., John
Westinghouse Electric Corporation
T. B. Wood's Sons Company

CUTTERS
Thomas W. Hall Co.
Noble & Wood Mach. Co.
Perkins & Son, Inc., B. F.
The Smith & Winchester Mfg. Co.
Taylor Stiles & Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works Co.

DE-INKING
Kinsley Chemical Co.

DIGESTERS
The Biggs Boiler Works Co.
H. K. Porter Company Inc.
Pusey & Jones Corp.

DOCTORS
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

DOCTOR BLADES
Black-Clawson Company
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Shartle Brothers
United States Rubber Co.
Westinghouse Electric Corporation

DRIERS
Black-Clawson Company
Murray Mfg. Co., D. J.
J. J. Ross Company
Ross, J. O. Engineering Corp.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

DRIVES
Allis-Chalmers Mfg. Co.
Appleton Machine Co.
Bird Machine Co.
Black-Clawson Company
Davis, Frank H., Co.
De Laval Steam Turbine Co.
Dilts Machine Works
Downingtown Mfg. Co.
Farrel-Birmingham Co.
General Electric Company
Horton Manufacturing Co.
Rodney Hunt Machine Co.
Montague Machine Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
T. B. Wood's Sons Co.
Valley Iron Works Co.
Westinghouse Electric Corporation

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Son Co.
Moore & White Co.
Noble & Wood Machine Co.
Norwood Engrg. Co.
D. J. Murray Mfg. Co.

DYESTUFFS
Calco Chemical Co.
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuff Corp.
National Aniline Division, Allied Chemical & Dye Corp.
Paper Makers Chemical Department, Hercules Powder Co.
C. K. Williams & Co.
Witco Chemical Co.

EVAPORATORS
Black-Clawson Company
Goslin-Birmingham Mfg. Co., Inc.
Murray, D. J., Mfg. Co.
Traylor Engineering & Mfg. Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O.

FEEDERS
Merrick Scale Mfg. Co.
Leeds & Northrup
Traylor Engineering Co.
Wallace & Tiernan

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bloomfield Woolen Co.
Bulkley, Dunton Pulp Co. Inc.
Draper Bros. Corp.
Fitchburg Duck Mills
Huyck & Son, F. C.
Lockport Felt Co.
Mt. Vernon-Woodbury Mills, Inc.
Morey Paper Mill Supply Co.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Waterbury Felt Co.
Woodward, Baldwin & Co.

FELT GUIDES
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron Corp., John

FILLERS
American Colloid Co.
Amer. Cyanamid & Chem. Corp.
International Pulp Co.
W. H. Loomis Talc Corp.
Union Talc Co.
Vanderbilt Co., R. T.
Witco Chemical Co.

FILTERS
Moore & White Co.
J. O. Ross Engrg. Corp.
Worthington Pump & Mchy. Corp.
Witco Chemical Co.

FLOORING, GRATING & TREADS
Hendrick Mfg. Co.
Norton Co.
Manhattan Rubber Mfg. Div. of Raybestos-Manhattan, Inc.
United States Rubber Co.

FORMING MACHINES
Downingtown Mfg. Co.
Noble & Wood Machine Co.
Oliver United Filters
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.

WHERE TO BUY

GEARS
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

GRINDERS
Covel-Hanchett Co.
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Samuel C. Rogers and Company
The Sandy Hill Iron & Brass Works

GRINDING WHEELS
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Simonds Worden White Co.
United States Rubber Co.

HEATING, VENTILATING AND AIR CONDITIONING
The Appleton Machine Co.
Armstrong Machine Works
E. D. Jones & Sons Co.
General Electric Co.
Grinnell Company
Leeds & Northrup
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Ross Engineering Corp., J. O.
Shartle Brothers Machine Co.
Valley Iron Works Co.
Worthington Pump & Mchy Corp.

HOISTS
Appleton Machine Co.
Dilts Machine Works
Rodney Hunt Machine Co.
Ingersoll-Rand Co.
E. D. Jones & Sons Co.

HOSE (Air, Water, Suction, etc.)
The Cincinnati Rubber Mfg. Co.
The Manhattan Rubber Manufacturing Division of Raybestos-Manhattan Inc.
United States Rubber Co.

INSTRUMENTS, TESTING AND MEASURING
W. H. & L. D. Betz
H. P. Bowsher
The Foxboro Company
General Electric
W. & L. B. Gurley
Leeds & Northrup Company
National Technical Laboratories
B. F. Perkins & Son
Taber Instrument Corp.
Taylor Instrument Cos.
Wallace & Tiernan Co., Inc.

JORDAN FILLINGS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

KNIVES
Black-Clawson Company
Dilts Machine Works, Inc.
Hamblet Machine Co.
E. D. Jones & Sons Co.
Simonds Worden White Co.
Valley Iron Works Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
W. H. & L. D. Betz
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Taber Instrument Co.
Taylor Instrument Companies
Valley Iron Works Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.
Shartle Brothers

LUBRICANTS
Gulf Oil Corporation
Gulf Refining Co.
Sinclair Refining Co.
Socony-Vacuum Oil Co., Inc.
Sun Oil Company
The Texas Company
Tide Water Associated Oil Co.

LUBRICATORS
Hills-McCanna Co.

MICROMETERS & CALIPERS
Farrel-Birmingham Co.
Montague Machine Co.
Lobdell Car Wheel Co.
Walker-Goulard-Plehn Co.

MIXERS
Youngstown Welding & Engrg. Co.

MOISTENING EQUIPMENT
The Spray Engineering Co.

MOTORS AND GENERATORS
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Co.
Ingersoll-Rand Co.
Reliance Electric & Engrg. Co.
Westinghouse Electric Corporation

PACKING BOXES
Johnson Corporation
Shartle Brothers Machine Co.

PACKING
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
United States Rubber Co.

PAPER MACHINES
Black-Clawson Company
Downingtown Mfg. Co.
Thomas W. Hall Co.
Moore & White Co.
Pusey & Jones
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester

PAPER MACHINE SLICES
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER TUBE MACHINERY
Dietz Machine Works
Thomas W. Hall Co.
Hudson Sharp Machine Company
Langston Co., Samuel M.

PASTING MACHINES
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Pontevin Machine Co.
Shartle Brothers Machine Co.
Waldron Corp., John

PERFORATED METAL
Allis-Chalmers Mfg. Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.

PIPE
Black-Clawson Company
Crane Company
Grinnell Company
Shartle Brothers Machine Co.
Taylor Forge & Pipe Works
Walworth Company
Youngstown Welding & Engrg. Co.

PLATERS
Perkins & Son, Inc., B. F.

PLATES
Black-Clawson Company
Hendrick Mfg. Co.
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.
Timken Roller Bearing Co.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Dietz Machine Wks.
Thomas W. Hall Co.
Hudson-Sharp Machine Co.
Paper Converting Machine Co., Inc.
Pontevin Machine Co.
Rotogravure Engineering Co.
Shartle Brothers
Valley Iron Works Co.
Waldron Corp., John
Weber, Homer C.

PUG MILLS
Traylor Engineering & Mfg. Co.

PULPS
Andersen Co., J.
Bulkley, Dunton Pulp Co., Inc.
Gottesman & Co., Inc.
Elof Hansson, Inc.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp and Paper Trading Co.

PUMPS
Allis-Chalmers Mfg. Co.
Black-Clawson Company
Dorr Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Frederick Iron and Steel Co.
Hills-McCanna Co.
Ingersoll-Rand Co.
Johnson Corp.
Moore & White Co.
Nash Engineering Co.
Noble & Wood Machine Co.
Paper Converting Mch. Co.
Quimby Pump Co. Div. of H. K. Porter Company, Inc.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Warren Steam Pump Company
Worthington Pump & Machinery Corp.

RECOVERY SYSTEMS
Bulkley, Dunton Pulp Co., Inc.
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Pusey & Jones
Ross Engineering Corp. J. O.
Valley Iron Works Co.

RECTANGULAR BINS
Traylor Engineering & Mfg. Co.

REELS
Black-Clawson Company
Downingtown Mfg. Co.
De Laval Steam Turbine Co.
Hudson Sharp Machine Company
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Rodney Hunt Machine Co.
Rotogravure Engrg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
The Smith & Winchester Mfg. Co.

REFINERS
Appleton Machine Co.
Bahr Brothers Mfg. Co.
Beaer Brothers Co.
Dilts Machine Works
The Hermann Manufacturing Co.
E. D. Jones & Sons Co.
Murray, D. J. Mfg. Co.
Noble & Wood Machine Co.
Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Sprout, Waldron & Co.
Sutherland Refiner Corp.
Valley Iron Works

REGULATORS
Allis-Chalmers Mfg. Co.
Armstrong Machine Works
Bird Machine Company
The Brown Instrument Co.
The Foxboro Company
Jones, E. D., & Sons Co.
General Electric Co.
Johnson Corp.
Leeds & Northrup Company
National Technical Laboratories
Noble & Wood Machine Co.
Shartle Brothers
Taylor Instrument Companies
Wallace & Tiernan
Westinghouse Electric Corporation

RESINS
American Cyanamid & Chemical Corp.
The Resinous Products & Chemical Co.

ROLLS
Appleton Machine Co.
Black-Clawson Company
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Machy. Corp.
Lobdell Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
Perkins, B. F., & Sons Co.
Pusey & Jones Corp.
Roehlen Engraving Co.
J. J. Ross Company
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Shenango-Penn Mold Co.
Sinclair Co.
Smith & Winchester Mfg. Co.
Stearns Magnetic Mfg. Co.
United States Rubber Co.
Valley Iron Works Co.
Waldron Corp., John

ROLL COVERS
The Cincinnati Rubber Mfg. Co.
Youngstown Welding & Engrg. Co.

ROLL STANDS
Cameron Machine Co.
Johnstone Eng. & Machine Co.
The Kohler System Company
Moore & White Co.
Pontevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.

ROTARY KILNS
Traylor Engineering & Mfg. Co.

SATURATING MACHINES
Black-Clawson Company
Moore & White Co.
Noble & Wood Machine Co.
Pontevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman C.

SCALES
Merrick Scale Mfg. Co.

SCREEN PLATES
Fitchburg Screen Plate Co.
Magnus Metal Corp.
Morey Paper Mill Supply Co.
Union Machine Co.
Union Screen Plate Co.

SCREENS
Allis-Chalmers Mfg. Co.
Appleton Wire Works
Appleton Machine Co.
Bird Machine Company
Carthage Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Harrington & King Perforating Co.
Hendrick Manufacturing Co.
E. D. Jones & Sons Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Traylor Engineering & Mfg. Co.
Valley Iron Works Co.

SCRUBBERS
Traylor Engineering & Mfg. Co.

SHEET MACHINES
Thomas W. Hall Co.
The Hermann Manufacturing Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
Valley Iron Works Co.

SHOWER PIPES
Bird Machine Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
Improved Paper Machy. Corp.
Moore & White Co.
Shartle Bros. Mach. Co.
Smith & Winchester Mfg. Co.

SHREDDERS
Bauer Brothers Co.
Carthage Machine Co.

SIZING
American Cyanamid & Chemical Co.
Black-Clawson Company
The Dow Chemical Co.
du Pont, E. I., de Nemours & Co.
National Oil Products Co.
Paper Makers Chemical Department, Hercules Powder Co.
Pioneer Salt Company
Socony-Vacuum Co.
Philadelphia Quartz Co.

SLITTERS
Black-Clawson Company
Cameron Machine Co.
Carthage Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co., Inc.
Hamblet Machine Co.
Hudson Sharp Machine Company
Johnstone Eng. & Machine Co.
Langston Co., Samuel M.
Moore & White Co.
D. J. Murray Mfg. Co.
Pontevin Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Simonds Worden White Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.
Waldron Corp., John

SPRAY NOZZLES
The Spray Engineering Co.

STAINLESS STEEL
Eastern Stainless Steel Corp.
Industrial Steels, Inc.

STARCH
American Cyanamid & Chemical Corp.
Clinton Co.
National Starch Products, Inc.
Stein, Hall & Co., Inc.

WHERE TO BUY

STEAM SPECIALTIES
Johnson Corp.
Shartle Bros. Mch. Co.
Stickle Steam Specialties Co.

STRAPPING & STRAPPING MACHINES
The Stanley Works

STUFF CHESTS
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

SUCTION BOXES
Black-Clawson Company
A. E. Broughton & Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Westinghouse Electric Corp.

SULPHUR
American Cyanamid & Chemical Corp.
Stauffer Chemical Company
Texas Gulf Sulphur Co.
Witco Chemical Company

SULPHUR BURNERS
Valley Iron Works Co.

TALC
American Cyanamid & Chemical Corp.
W. H. Loomis Talc Corp.
International Talc Company

TANKS
Frederick Mfg. Co.
E. D. Jones & Sons Co.
Kalamazoo Tank & Silo Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Noble & Wood Machine Co.
H. K. Porter Company Inc.
Rodney Hunt
J. O. Ross Engrg. Corp.
Shartle Brothers Machine Co.

Traylor Engineering & Mfg. Co.
United States Rubber Co.
Waldron Corp., John
Youngstown Welding & Engrg. Co.

THICKENERS, DECKERS & SAVE-ALLS
Bird Machine Company
Bulkley, Dunton Pulp Co. Inc.
Carthage Machine Co.
Dilts Machine Works
Dorr Co.
Downingtown Mfg. Co.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works Co.

TITANIUM
E. I. Du Pont de Nemours & Co.
Titanium Pigment Co.
R. T. Vanderbilt Co.
Witco Chemical Company

TOOLS
Acme Steel Company
Ingersoll-Rand Co.
The Stanley Works
Walworth Company

TRUCKS
Elwell Parker Electric Co.
Wright-Hibbard Ind. Elec. Truck Co.

TRAPS
Armstrong Machine Works
Crane Co.
Grinnel Company
Johnson Corporation
Shartle Bros. Mch. Co.

TUBS
Rodney Hunt Machine Co.
Noble & Wood Machine Co.
Shartle Brothers
Valley Iron Works Co.

TURBINES
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.
General Electric Company
Hunt, Rodney, Mach. Co.
Westinghouse Electric Corp.
Worthington Pump & Machinery Corp.

USED EQUIPMENT
Frank H. Davis Company
Gibbs-Brower Co.
Thomas W. Hall Co.
Noble & Wood Machine Co.
Rotogravure Engrg. Co.
J. J. Ross Company
Shartle Brothers Machine Co.

VALVES
Crane Company
Dilts Machine Works
The Foxboro Company
Hills-McCanna Co.
E. D. Jones & Sons Co.
Kennedy Valve Mfg. Co.
Magnus Metal Corp.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co.
The Permutit Company
William Powell Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Taylor Instrument Companies
Valley Iron Works Co.
Walworth Company

VATS & VAT PARTS
Union Machine Co.
Union Screen Plate Co.

WASHERS
Bird Machine Company
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Shartle Brothers Machine Co.
Valley Iron Works Co.

WATER CONDITIONING
The Permutit Company

WAXING MACHINERY
Black-Clawson Co.
Potdevin Machine Co.
Rotogravure Engrg. Co.
Shartle Brothers Machine Co.
Waldron Corp., John
Weber, Herman G.

WELDING EQUIPMENT
Allis-Chalmers Mfg. Co.
General Electric Company
Walworth Company
Westinghouse Electric Corp.

WET MACHINES
Black-Clawson Co.
Carthage Machine Co.
Downingtown Mfg. Co.
Moore & White Co.
Montague Machine Co.
Noble & Wood Machine Co.
Pusey & Jones Corp.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works Co.

WINDERS AND REWINDERS
Black-Clawson Company
Cameron Machine Co.
Dietz Machine Works
Downingtown Mfg. Co.
Thomas W. Hall Co.
Hudson-Sharp Mach. Co.
Langston Co., Samuel M.
Johnstone Eng. & Machine Co.
The Kohler System Company
Montague Machine Co.
Moore & White Co.
Paper Converting Mch. Co.
Potdevin Machine Co.
Pusey & Jones Corp.
Rotogravure Engrg. Co.
J. J. Ross Company
The Sandy Hill Iron & Brass Works
Smith & Winchester Mfg. Co.
Waldron Corp., John

WIRES
Appleton Wire Works
Black-Clawson Company
Bulkley, Dunton Pulp Co. Inc.
Cheney Bigelow Wire Works
Hayden Wire Works
International Wire Works
Lindsay Wire Weaving Co.
Shartle Brothers Machine Co.

ALPHABETICAL INDEX TO ADVERTISERS

Aktivin Corporation —
Allis-Chalmers Mfg. Co. —
American Car & Foundry Co. —
American Colloid Company —
American Cyanamid & Chemical Corp. —
American Resinous Chemical Corp. —
Ames, B. C., Company 5
Andersen & Co., J. —
Ansul Chemical Co. —
Appleton Machine Co. 16
Appleton Wire Works, Inc. 63
Appleton Woolen Mills 62
Arabol Manufacturing Co. —
Armstrong Machine Works —
Asten Hill Mfg. Co. —
Automatic Transportation Co. —

Bahr Brothers Mfg. Co. —
Bauer Brothers & Co. —
Bausch & Lomb Optical Co. —
Betz, W. H. & L. D. —
Binney & Smith Co. —
Bird Machine Company 9
Black-Clawson Co. 59
Bloomfield Woolen Co. —
Boston & Maine Railroad —
Bowsher Company, N. P. —
Bristol Company, The —
Builders Providence Inc. —
Bulkley Dunton Pulp Co. —

Calco Chemical Co., Inc. —
Cambridge Instrument Co. —
Cameron Machine Co. 53
Carthage Machine Co. —
Cheney Bigelow Wire Works 28
Ciba Company, Inc. —
Cincinnati Rubber Mfg. Co. —
Clark, Frederic C. —
Classified Advertising 58
Clinton Company —
Columbian Carbon Co. —
Cooper Alloy Foundry Co. —
Corn Products Refining Co. —
Corning Glass Works —
Covel-Hanchett Co. 63
Crane Company —

DeLaval Steam Turbine Co. 63
Diamond Alkali Company —
Dietz Machine Works —
Dilts Machine Works 59
Dorr Company —
Dow Chemical Co. 13
Downingtown Mfg. Co. 2
Draper Bros. Company 35
Du Pont de Nemours & Co., Grasselli Chem. Div. 40
Du Pont de Nemours & Co., Inc., Dyestuffs Dept. —

Elixman Paper Core Co. —
English China Clays Sales Corp. —

Farrel-Birmingham Co. —
Fawick Airflex Inc. —
Ferguson, Hardy S., & Co. 63
Foster Wheeler Corp. —
Foxboro Company 4
Frederick Iron & Steel Co. 53

Geigy Company, Inc. —
General American Transportaion Co. —
General Chemical Co. —
General Dyestuff Corp. —
General Electric Co. —
Gibbs-Brower Co., Inc. 60
Goodrich Chemical Co., B. F. 30
Goodyear Tire & Rubber Co. —
Goslin-Birmingham Mfg. Co., Inc. —
Gottesman & Co. Front Cover
Graton & Knight Co. 23
Greene Tweed & Co. —
Grinnell Company, Inc. —
Gulf Oil Corporation 3
Gurley, W. & L. E. —

Haering & Co., D. W. —
Hall, Thomas W., Company 60
Hamblet Machine Company —
Hansson, Inc., Elof. 39
Hardy, George F. 63
Harrington & King Perforating Co. 63
Hayden Wire Works —
Hendrick Mfg. Co. 62
Heppenstall Company 29
Hercules Powder Company —
Hermann Mfg. Co. 55
Hooker Electrochemical Co. —
Horton Manufacturing Co. —
Hubbs Houses —
Hudson Sharp Machine Co. —
Hunt Machine Co., Rodney —
Huyck & Son, F. C. 67

Improved Paper Mchy. Corp. —
Industrial Steels, Inc. —
Ingersoll Rand Co. —
International Nickel Co. —
International Talc Co. 62
International Wire Works —

Jenkins Sons, Inc., M. W. —
Johnson & Wierk —
Johns-Manville Corp. —
Johnstone Engrg. & Mch. Co. —
Jones, E. D. & Sons Co. 25

Kalamazoo Tank & Silo Co. —
Kennedy Valve Mfg. Co., The —
Kinney Mfg. Company —
Kinsley Chemical Co. 62
Kohler System Co. —

Langston Co., Samuel M. 63
Leeds & Northrup Co. —
Lindsay Wire Weaving Co. 55
Lobdell Company 36
Lockport Felt Co. —
Lodding Engineering Co. —
Loomis, W. H., Talc Corp. —
Lyddon & Company —

Magnetic Pigment Division, Columbia Carbon Co. —
Magnus Chemical Co. —
Main, Inc., Chas. T. 63
Manhattan Rubber Mfg. Div. of Raybestos Manhattan, Inc. —
Mathieson Alkali Works —
Meisel Press Mfg. Co. —
Merrick Scale Mfg. Co. 62
Merritt-Chapman & Scott Co. 63
Michigan Steel Casting Co. 62
Monstanto Chemical Co. 24
Moore & White Company 63
Mt. Vernon-Woodberry Mills —
Murdock, Harold R. —
Murray Mfg. Co., D. J. —

Nash Engineering Co. —
National Aniline Division, Allied Chemical & Dye Corp. —
National Adhesives —
National Oil Products Co. —
Niagara Alkali Company 19
Nichols Engrg. & Research Corp. —
Noble & Wood Mach. Co. —
Norton Company —

Oakite Products, Inc. —
Oliver-United Filters Co. 31
Orr Felt & Blanket Co. 53

Packing Products, Inc. —
Paper Converting Mch. Co. —
Paper & Industrial Appliances Inc. —
Parsons & Whittemore, Inc. —
Pennotex Oil Corp. —
Pennsylvania Salt Mfg. Co. —
Permutit Company, The —
Perkins-Godwin Co. —
Perkins & Sons, Inc., B. F. —
Philadelphia Quartz Co. —
Pittsburgh Plate Glass Co., Columbia Chemical Division —
Porter, H. K., Company, Ins. —
Potdevin Machine Co. 63
Powell, Wm., Company —
Price & Pierce, Ltd. 55
Pusey & Jones Corp. 6

Quimby Pump Co., Division of H. K. Porter Co., Inc. —

Railway Supply & Mfg. Co. —
Raymond Service, Charles P. 58
Reading Chain & Block Corp. 32
Record Fdy. & Mch. Co. —
Reichhold Chemical, Inc. —
Reliance Elec. & Engrg. Co. —
Research Corp. —
Resinous Products & Chem. Co. 33
Rhoads & Sons, J. E. —
Roehlen Engraving Works, Inc. —
Rogers & Company, S. C. —
Rollway Bearing Co. —
Ross Engrg. Co., Inc., J. O. —
Ross Paper Machinery Co., Jack 60 & 61
Ross, J. J., Company 58 & 61
Rotogravure Engrg. Co. —

Sandy Hill Iron & Brass Works —
Seaboard Air Line Ry. 57
Shartle Bros. Machine Co. 59
Shenango-Penn Mold Co. —
Shuler & Benninghoffen —
Simonds Saw & Steel Co. —
Simonds Worden White Co. —
Sinclair Refining Company —
Sirrine, J. E. & Co. —
SKF Industries, Inc. —
Smith & Winchester Mfg. Co. 57
Socony-Vacuum Oil Co., Inc. —
Solvay Sales Co. —
Sonoco Products Co. 51
Spray Engineering Company —
Sprout, Waldron & Co. 63
Stanley Works, The —
Stauffer Chemical Co. 55
Sticht Co., Inc., Herman H. —
Stone & Webster Engrg. Corp. —
Stearns Magnetic Mfg. Co. 57
Stein Hall & Company —
Stickle-Steam Specialties Co. —
Sun Oil Company —
Sutherland Refiner Corp. —

Taylor Forge & Pipe Works —
Taylor Instrument Co. 15
Taylor Stiles & Co. —
Texas Company, The —
Texas Gulf Sulphur Co. 53
Tidewater Assoc. Oil Co. 10 & 11
Timken Roller Bearing Co. —
Titanium Pigments Corp. —
Traylor Engrg. & Mch. Co. 51
Trinity Bag & Paper Co. —
Tucker & Co., Louis —

Union Machine Co. —
Union Screen Plate Co. —
United Carbon Co. 57
U. S. Rubber Co. —

Valley Iron Works —
Vanderbilt Co., R. T. —

Waldron Corp., John 27
Walker-Goulard-Plehn Co. —
Wallerstein Company —
Walworth Company 17
Warren Steam Pump Co. —
Waterbury Felt Co. —
Weber, H. C. & Company —
Westinghouse Elect. Corp. —
West Virginia Pulp & Paper Co. 57
Witco Chemical Company 37
Woods Sons Co., T. B. —
Woodward Baldwin & Co. —
Worthington Pump & Mchy. Co. —
Wright-Hibbard Ind. Elect. Truck Co. —
Wyandotte Chemicals Corp. —

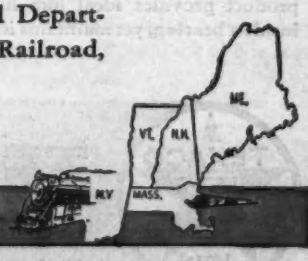
Youngstown Welding & Engrg. Co. Back Cover

WHEN *Nylon* COMES BACK HOME

A famous hosiery mill in Franklin, N. H., can start making sheer, 75-gauge, seamless hosiery the day after war releases nylon from its present job — parachutes, mosquito nettings, and other vital items.

Northern New England is set for a continuance of steady employment. Factories here can keep on beating the schedule for wartime production and, at the same time, fulfill the great responsibility of maintaining employment levels throughout transition periods. *Much of what Northern New England makes for war is also needed for peace.*

Boston and Maine is in close touch with what Northern New England mills are making. We know their present and their postwar capabilities. We know the sound basis of their labor, water power, raw material, and transportation facilities. We know also what this area has to offer in the way of strategically well-located sites for other factories and warehouses. Let us put this knowledge to work for you. Write E. F. Reed, Industrial Department, Boston and Maine Railroad, Boston 14, Massachusetts.



BOSTON *and* **MAINE**

ONE OF AMERICA'S RAILROADS - ALL UNITED FOR VICTORY

PULP for 700,000 WAR ITEMS

PULP and paper are used in some 700,000 war items taking half the production of the nation's mills. Consequently, if normal civilian requirements are to be met, more pulpwood must be produced — and faster — than ever before.

To maintain a fast, uninterrupted flow of wood from forest to mill, trucks, tractors and other logging equipment must operate at peak efficiency. This can be assured, as experienced mill operators know, through effective lubrication — the kind provided by Texaco.

Texaco Marfak, for example, provides a tough, adhesive film that cushions bearings against road shocks and protects them against road splash. This unusual product provides ideal film lubrication inside a bearing, yet maintains its original consistency at the outer edges . . . sealing itself in, sealing out grit and water.

For wheel bearings, use *Texaco Marfak Heavy Duty*. It stays in the bearings — assuring safer braking. No seasonal change is required.

For high-speed ball and roller bearings in electric motors and other equipment, use *Texaco Regal Starfak*.

Texaco lubricants have proved so effective in service they are definitely preferred in many fields, a few of which are listed at the right.

Texaco Lubrication Engineering Service is available through more than 2300 Texaco distributing plants in the 48 States. Get in touch with the nearest one, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

THEY PREFER TEXACO

★ *More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.*

★ *More revenue airline miles in the U. S. are flown with Texaco than with any other brand.*

★ *More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.*

★ *More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.*

★ *More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.*

TEXACO

TEXACO Lubricants and Fuels

FOR THE PAPER INDUSTRY

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT — CBS